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VOLUME 5, NUMBER 6 • NOVEMBER/DECEMBER 1994

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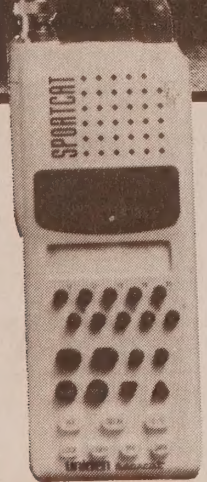

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NATIONAL SCANNING

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Our cover: Emergency vehicles at the scene in Delaware County, Pennsylvania. Photo by Mark Swarbrick

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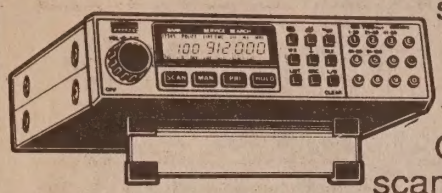

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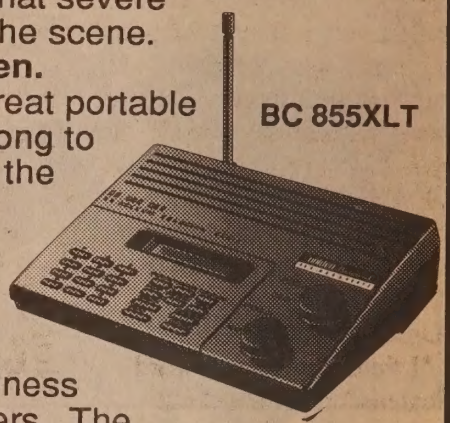
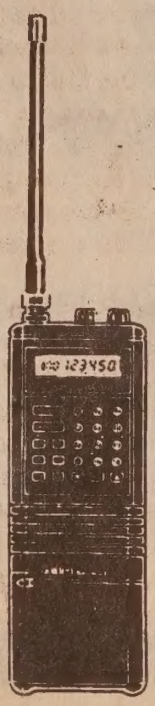


BC 855XLT



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First Word

What's in a Name?

Last issue we were scratching around for a name. Not for the magazine or anything, but for people involved in the scanner hobby. I told the story of getting a letter from one well-known hobbyist who had referred to himself as a "scannist." My response was, in a moment of deep moral weaknesss, to make fun of the term.

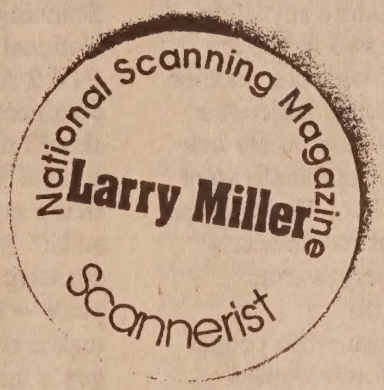
For that sin, I was marched to the dictionary by Albert McDonnell (MA 1 AMS) of Dorchester, Massachusetts.

"I think the coined word 'Scannist' is an excellent choice to describe a 'scanner listener,'" says Al. "Check the dictionary for '___ist.' Among its many meanings is 'A person who operates, plays, uses a specified thing... eg. motorist, organist, hobbyist, etc.' – 'A person skilled, trained, engaged or employed in a specified field... machinist, radiologist, etc.' Thus, a 'scannist' would be someone who operates, is skilled, uses, or engages in scanning!! It has absolutely nothing to do with being an artist."

"I really enjoyed your story and it's clear that you're crazy, but Larry, I think you're wrong about the term, 'scannist,'" wrote Kim Anderson (AZ 2 CYG) of Tucson, Arizona. "Nothing personal," she says. Sure, Kim.

Ron Cheshire of Ridgecrest, California also tossed his support behind "scannist" but with a slight difference. He prefers "Scannerist" and even went to far as to put together buttons and badges to launch his campaign. Darned good argument, folks. If I am skilled at using a scanner, I'm a scannist. Hmmm. Let me mull that around a bit. Now let's see. If I make toast in the morning, I'm also a toasterist?

David Hamilton (CA 6 AGO) suggested "scannite(s), Monitorian(s), Scanitech(s) and signalite(s), among others. (Scannist is beginning to sound good...) "Can't say that I would like being called a 'scannist' either," says Jim Pelham (KY 4 AFK) of Hopkinsville, Kentucky. (Hey, Jim. Wait til they start calling you a 'signalite.') "At your suggestion I tried my hand at coming up with an acceptable title... Somehow a FREQ FREAK just doesn't offer any discernable dignity. I think your final conclusion of 'Scanner Listener' is still the difinitive identification, albeit somewhat mundane."



The controversy rages on... although in all fairness Al McDonnell's argument was pretty convincing.

William Norris (KS 0 AEQ) of Kansas was kind enough to write us a letter telling about a really unusual scanning event. It's the kind of story that makes you wonder whether you should laugh or cry. We'll let him tell it in his own words.

"If you ask scanner listeners why they enjoy listening to their scanners, you may receive comments that they want to be the first to know what is happening in their community, or that they like to hear the news as it unfolds right before them. Most people want to be on top of the action. That's what I would have said.

"The past summer was very bad for me, health-wise. I suffered a heart attack which required by-pass surgery and I spent from July 16 to September 9th in the hospital. Eighteen days later, I was readmitted for a stroke.

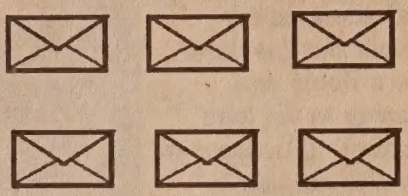
"The night I was admitted for the stroke, I was at home listening to my scanner. I did not know what was happening to me and was not aware that I had a problem until the silence on my scanner broke. An ambulance and first responder was being dispatched to my house. I called my wife and inquired as to what was happening and why an ambulance was coming to our house.

"This is truly a case where listening to my scanner, I was not the first to know what was going on. I was the last to know what was going on. I was the last to know what was happening in my own home." Bill, being a true scannist, actually brought his scanner to the hospital with him.

"The nurses were all interested in the scanner," he says, "and when an ambulance would arrive, they would come to my room to see if they were receiving new patients." Best of luck to you, Bill. It's when you hear them dispatching that long black car to your house that you've got to worry!

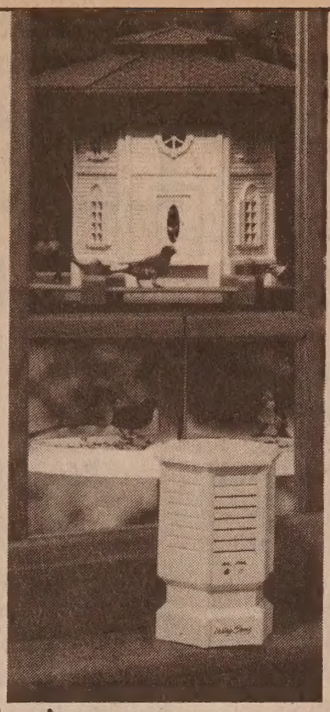
I've read a lot of unusual scanning stories in my day but this one is a real topper. Anybody got a better yarn? (Perferably true.)

LETTERS



With Larry Miller

"Check this out!" says Tim Hennesy (MI 3 BER) of Battle Creek, Michigan. "It's an advertisement I saw for a birdfeeder with a microphone in it so that you can listen to the little critters while they feed. There's apparently a transmitter in the birdfeeder because I can see a little whip antenna on the receiver. And that means that if



it's on radio, we can hear it on our scanners. I'm guessing that it operates on 49 MHz. So far I haven't heard any Wing Song birdfeeders on my scanner but this does give a whole new meaning to the term "birdies." (For those of you who are new to this – scanning, not birdfeeding – a "birdie" is a "false," signal actually generated by the scanner's own circuitry. Ocassionally you may come across one. It sounds like a full-strength signal but there's never any audio on it.)

If you'd like more information on Wing Song birdfeeder/sound monitor call 1-800-692-6056.

"I've gotta respond to something that a fellow scanner listener (or scannist) wrote a few issues back," writes David Hamilton (CA 6 AGO) of California. "In 'Graveyard Scanning' (see: Letters, Vol. 5/#3), Stephen Feldstein (of Florida) stated that '...in the wee early hours of the morning, there is nothing out there [to listen to on the scanner].' "Well, Stevie should work the 'corpse campus' hours (and beyond!) in my backyard: COMPTON, CALIFORNIA! I'm my own boss (owner and operator of MACHINE- WOLF GRPHX). Consequently, I might switch my scanner on at any time. I'll run through a better-than-typical 'wee early hours of [my] morning' but more common with each passing year.

"2:03 AM: The ham radio boys are goin' at it heavy (147.4350!). One guy's talking about the other's wife: what he'll do to her after he's finished 'bitch slapping' the fellow ham. Next thing you know the married couple are on their way to the foul-mouthed ham's (parent's) house. Cursing and death threats fly for nearly an hour.

"2:47 AM: I switch over to my local police frequency after having heard about 15 gun shots from a mile or so away. (It sounded like two different types of guns.) Dispatch is on the air within 8 - 10 seconds. Various anonymous neighbors have called in. Two police cars switch over to channel two as the air-support (police helicopter) asks for a more detailed location of the gunfire.

"2:51 AM: Pick up a cordless phone conversation between two ladies who are discussing the multiple gunfire of a few minutes earlier. The conversation suddenly switches to a personal (sexual) nature revealing that these two ladies are very much involved with one another.

"2:55 AM: The police helicopter thinks that they may have found one of two cars they now speculate were shooting at one another. Thermo-type camera indicates that the vehicle's motor/hood is still very warm. Ground units move in.

"3:01 AM: The ham radio couple have arrived at the foul-mouthed ham's parent's home and the guy has kicked in the door. Police are called as two males wrestle on the front lawn.

"3:24 AM: More shots fired! More north of me – switching to the Los Angeles Sheriff. They handle all of that area: Lynwood, CA. Three cars are asking each other what direction those came from..." "I think Mr. Feldstein might like it around here – in the wee earlies!"

So far, response to the merger between National Scanning and NorthEast Scanning News has been great. "I think National Scanning is the best magazine I've ever read. It's terrific," says Tom Phillips (FL 1 CER) of Port St. Lucie, Florida. "Then I get the September/October issue and I find that I'm now getting NorthEast Scanning News, too. "This is too much. This is scanning ecstacy. I think I'm going to faint."

David Hamilton self-portrait?

Josh Heller, himself a NorthEast Scanning News staffer, agrees – though not in quite such effusive terms. "I'm glad you were able to basically save NESN from non- existence. Thanks for helping us all out and I'm sure that you will like what you see from NESN readers and writers. I believe this merger, so to speak, will benefit both organizations."

"Thanks for your excellent publication! Keep up the good work," says Jeremy Eisen (WA 7 AGW).

"It's great to hear that NorthEast Scanning News is merging with National Scanning," says Mike Hilton (NY 2 AGT) of New York. "The combination of NESN and NatScan should make a terrific information source. I look forward to Les Mattson's columns and the humor that he adds!" Mike, that's the thing that first attracted me to NESN in the first place – the fact that Les Mattson makes scanning fun. Best of all, the guy's the same way in person, too.

By the way, make a mental note of the NESN Summer Picnic. Les tells me that he still plans to hold it in 1995 – and that everyone, including NatScan readers, are invited. More details to come.

Chris Silberhorn of Hallandale, Florida, is looking for someone to give him a hand. He's got a Bearcat 200XLT and now that all the police and sheriff agencies in Broward County have switched over to 800 MHz, he'd like a little advice on how to best configure his scanner for these new frequencies. If you're in Broward County and can help Chris, drop us a short note along with your phone number and we'll pass it on to Chris. He'll give you a call.

A number of people wrote to express concern about my suggestion on using a car battery for back-up power in the event of a power failure. (See Vol.5/#6.) Technical Wiz and Mod

House author Steve Donnell says that "Even though you included a mention of the obvious caveats when using a car battery, I don't think these can be over-emphasized enough. Nor did you note the importance of including proper fusing with this type of power pack." Carl Flach of Alameda, California agrees, saying that "who wants to haul a 50 pound pack of sulfuric acid into their house to possibly spill and destroy person or property, not to mention wreck one's back?" Carl also points out that a scanner -- he uses his BC2500XLT as an example -- averages .1 amps draw at the 6 volt level. "A typical car battery has a 60 to 80 amp hour rating, or enough to supply a scanner for about a month." Donnell agrees, saying that "Offhand, I think that the use of a car battery to run a scanner or two is a bit of overkill, unless you are planning to ride out a nuclear war..."

Guys, you are probably right. It's just that I remember that article we ran by Brian Webb a year or so ago. That article detailed his experiences after the earthquake, including the difficulty in finding regular batteries and the lack of power. Last winter, we were without power here for several days due to a snowstorm. For those with the proper experience, I'll stand by my car battery.

Before I forget, Ken Hooper sent in a catalog from M. Bohnhoff. They have a 12 VDC Power Supply with automatic switchover -- completely assembled and apparently with a gel cell battery -- for $69.00 plus 6.50 UPS. To get a copy of their catalog to order call 708-918-7330. Their address is Box 1243, Wheeling, IL 60090. Tell them you read about it in National Scanning and maybe we'll be able to snag a new advertiser.

Tom Allentini of Philadelphia (PA 3 ERJ) suggests the model 119594 Battery Charger/ Maintainer for $39.95 plus 6.50 UPS. It "maintains any 12v battery at full charge during prolonged non-use..." Tom got his from a company called Improvements, 23397 Commerce Park, Beachwood, OH 44122. Their number is 800-642-2112.

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Some months back, I sent in an advertisement for an 8-Element Shooting Star CB Antenna with rotator and controls. Has it run yet in National Scanning?" R.S. Purse of Shelton, Washington, is the writer of this letter. Yes, it has, in the last issue. In fact, although most people don't realize it, free classifieds are part of the deal you get when you sign up with NatScan. Here's the details:

1. You must be a current subscriber.
2. The item being sold has to have something to do with radio.
3. Your ad must be non-commercial in nature. (In other words, if you're a business, no matter how big or small, you must purchase display advertising.)
4. Your ad must be mailed to us -- no ads by phone. Send your ads to National Scanning at Box 360, Wagontown, PA 19376 and they'll appear in the next available issue.

"I've been a member of a scanner club for the state of Ohio," writes one person who asks that his name remain anonymous. "Over the past few years, the club has tried, without consulting the membership and without much success, to expand beyond it's original service area into surrounding states. Now, despite growing rumblings of discontent from members, they say that they're going to add four pages (and they're such little pages!) for some of the bigger northeastern states. The result is that the club's original purpose -- and its promise to the Ohio scanner listeners it was formed to serve -- has been diluted so bad that it's just not worth getting. I'm not renewing my subscription to [the other club publication] and I know a lot of other people who aren't.

I think that you're making a mistake. Local clubs need and deserve your support -- especially when it seems like things are going to heck in a haywagon. Remember, club leadership is a big job and usually it's a volunteer position. So have a heart. Support your local club.

We apparently made a mistake on Paul Cruthers' (CO 0 AAN) great photo spread in the last issue. On the bottom left corner, the photo is labeled, "Fire Station No.2 Broadway and Baseline." This is a historic fire house and it is at 1020 Aurora. Paul was kind enough to pass along this picture of the real Fire Station No. 2. (features on the table of contents page). Thanks again, Paul, for the great pictures!

"There is no such place in Rhode Island as South Kingston," says Harold Neal of nearby Warwick, RI. Harold is referring to some frequencies that were printed in last NatScan. "There is a North Kingstown, and South Kingstown," he explains. "Within South Kingstown there are two villages, Kingston and West Kingston, but nowhere in R.I. is there a South Kingston. Even Rhode Islanders are confused by this and rightly so." Harold closes by saying that "I really enjoy National Scanning. Real nice articles, and reporting."

That's all we have time for this month. Thanks for all the letters. Don't forget to try your hand at the contest. There's a Sportcat up for grabs this month. Good Luck!

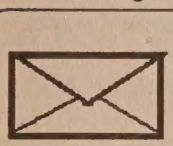
Readers Report Readers Report Readers Report

Going English

Police and dispatchers in Delray Beach, Florida, are dropping their radio 10-codes. Police adopted the system in the 1940s when poor sound quality made short, clear communications necessary. Over time, the 10-Codes got so involved that they became unintelligible, even to some police officers. Add to that the confusion between "10 Codes" and "Signal Codes" and you've got a real mess on your hands. A simple "10-60" (assist a motorist) can easily be confused with a "Signal 60" (sniper fire). An officer who goes 10-42 is simply going out of service at home. If he announces that he's going Signal 42, that's child molesting. Some are used so infrequently that officials doubt anyone would know what's happening.

"If we give a Signal 45 (airplane crash) over the air," says Boynton Beach Police Communications Manager Hugh McCaffrey, "all you'd hear is sun visors slapping down when the guys go to look it up." The final straw occured during Hurricane Andrew when Delray Beach officers couldn't understand Metro-Dade PD's even more obscure "Q" and "Z" Codes. To compensate, the two departments had to use everyday language to understand one another.

"What a novel idea," said Capt. Alberto Melis of the Delray Beach Police Department, "using plain English."



Be a NatScan Reporter.

Scan your local newspaper for stories about radio in action. Then send the clippings to NatScan, Box 360, Wagontown, PA 19376

Telephone Surprise

Last spring, Angie Reed picked up the phone and had a long chat with a friend in Delphi, Indiana. They talked about all kinds of things. Sometime later, when the call was all but forgotten, Ms. Reed was charged with possession of marijuana. "I was shocked," said Reed. She was using a standard, wired telephone. What she didn't know was that he friend was using a cordless phone. What neither of them knew was that a Delphi police officer with a scanner was tuned in to that phone and, based on what he heard, filed the charges.

Baby Monitor Killing

Victor Parrella killed his wife. Listening in to the argument on a baby monitor was his girlfriend. The girlfriend taped the whole thing. When Parrella went to trial, the judge ruled that the tape could not be used as evidence – and the Pennsylvania Superior Court upheld him – because it violated the law governing the use of wiretaps as evidence. Because of the tape recording, Parrella was able to plea bargain the original charge of first-degree murder to third-degree murder. Now serving 10 to 20 years in a state prison, Parrella admits the gun slaying was a mistake. "I feel sorry for it."

Scanner Listener Saves Day

A conversation picked up on a scanner led police to the arrest of a suspect in a break-in attempt. Vanderburgh County Sheriff's Department spokesman Sgt. Rodney Buchanan said that a citizen was listening to his scanner and overheard two men talking about a plan to burglarize an office supply business and steal blank money orders. The citizen then informed police. Using clues picked up in the conversation, police received permission to hide inside the business. At about midnight, a man arrived and started prying on a drive-through window. Additional units were called and police arrested the man as he left the parking lot.

Readers Report Readers Report Readers Report

Many thanks to the following NatScan reporters this month: William Gallanger, Anchorage, Alaska; Michael Hilton (NY2AGT), Schenectady, New York; The Kuntzmans, Boynton Beach, Florida; Dick Lythgoe, Evansville, Indiana; Nagel, Columbus, Indiana

Readers Report Readers Report Readers Report

CB Send-Off

David Carroll was a long-haul trucker whose marriage was falling apart. At 32, Carroll had just separated from his wife and three daughters. One day, about a month ago, he pulled his rig into the parking lot of a convenience store and parked. Contemplating suicide, he took a gun from under the seat. Police, who were alerted by bystanders, arrived at the scene. Unable to get Caroll to accept a cellular phone, police negotiated with the trucker by CB.

Carroll's wife and kids soon came, trying desperately to convince him to give up the gun. But as police and family members worked, they were continually harassed by passing truckers on nearby Interstate 40 who taunted Carroll on the CB, sneering that he didn't have the guts to pull the trigger. Carroll did. He died at 1:25 PM after a three-hour stand-off.

"I guess they thought they were being funny," said an officer at the scene. "Maybe they thought this guy wasn't serious. It turned out he was." Officials say that they will not be able to persue charges against those who prodded the 32-year-old father of three to kill himself.

Widow Claims Cell Phone Caused Cancer

The family of a Florida man has sued a cellular phone manufacturer alleging that electromagnetic radiation from the phone caused or aggrevated the brain cancer that killed William P. Hartwig. This brings to at least five the number of suits filed against manufacturers or cell phones; none of the disputes has been resolved, says reporter Bill Duryea. The latest lawsuit seeks more than $2 million in damages. The Cellular Telecommunications Industry Association insisted in December that a study proved that cellular phones posed no health threat to users. But, says Duryea, that study has been debunked, and the Association, while saying the phones are safe, has said it will continue to finance research.

Costs Motorola Millions

Prosecutors in Oklahoma have issued a federal arrest warrant for John David Astacio, a 41 year old "computer wonk" who is accused, among other things, of reprogramming Motorola radios so they can pick up "restricted" police and fire channels.When police raided Astacio's employer, Tulsa Security Patrol, they found software that could be used to reprogram the radios. Motorola had an attorney present at the raid. Tulsa Security Patrol owner Larry Gass is apparently also under investigation. Gass says that he fears Astacio is dead. According to local newspaper reports, the reprogrammed radios were used by "media organizations and others." Sgt. Rod Hummel of the Tulsa Police Department said that police fear that the radios could interfere with communications between officers and could knock out the city's radio system. Pat Schod, a Motorola spokeswoman, said illegal use of Motorola software had cost the company "millions of dollars." Motorola she said, has won civil lawsuits to recoup money lost by such pirating of its software. Motorola is also on the move in Florida where a federal judge ordered 25-year-old Francis Harris to stop altering Motorola radios. Motorola claimed Harris was using copyright and trade secret information so that he could monitor "secret" law enforcement communications. Harris says that the data, codes and equipment he uses are available on the open market and that Morotola's action is an effort to censor the 1995 edition of his book, Frequency and Intelligence Directory.

Watch Your Mouth

The Wall Street Journal now says that bar associations in at least five states have cautioned their members that attorney-client confidentiality may be breached if they don't watch what they say on their cellular phones. "It's only a matter of time before a client will have a [legal] claim against a lawyer for disclosing something [over a cellular phone] to the client's disadvantage," says William Freivogel, vice president of Attorney's Liability Assurance Society. Savvy companies have long been alert to the dangers of inadvertantly disclosing business intelligence over a cellular phone," says the Journal. In March of 1990, it reports Peter Lynch, the mutual-fund executive in Boston, was overheard talking about his forthcoming resignation on a cellular phone. In 1988, a listener overheard the chairman of Popeye's Fried Chicken disclosing plans to take over rival Church's Fried Chicken. Still, because it's illegal to eavesdrop on a cellular conversation, any information gleaned about a lawyer or a client in that manner wouldn't be admissible in court, or any other legal proceeding, according to the Wall Street Journal. The most plain-English assessment of the situation came in an in-house memo circulated at the DuPont Company. It says, "If you don't want your conversation printed in the daily newspaper, then avoid using a cellular phone."

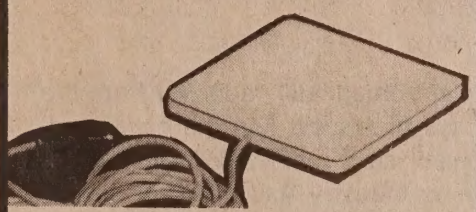
Who Uses the New Audio Breakthrough MicroEar?

Among others • Farmers checking for infestation in grain bins
Entomologists studying insect movement in soil or wood • Plumbers detecting water leaks
The hearing impaired • Law enforcement "bugging" a vehicle or room
Medical personnel monitoring heartbeat, muscle deterioration or blood movement
Security guards watching for unauthorized building activities • Hobbyists who enjoy experimenting

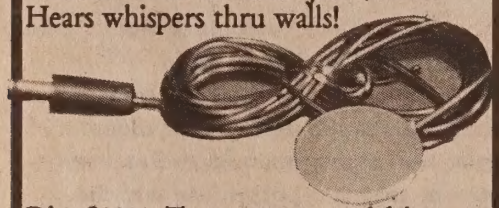
Here's How It Works...

To monitor virtually anything, use one of MicroEar's super sensitive sound sensors. Then, broadcast it to your scanner or listen with headsets or tape recorder with the amplifier. Turns walls, doors into microphones.

Some of the Sensors ...



Giant Ear S-2203C–Only 2½ x 2½ inches in size. Magnetically attaches to doors, buidings, cabints, desks, vehicles. 10 ft. of cable. Just $49.00. Hears whispers thru walls!

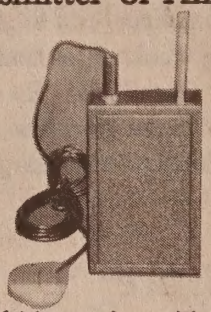


Disc S2201–Turns any material into a microphone. Attaches magnetically. $29.95

See-through Sensor ST-2201–Attaches to glass, wood, anything with tape. 1 x 4 inches wide. Only $49.00. Hears through glass.

Hear Whispers through Walls, Doors, Windows up to ¼ mile away

Pair Them Up with Our Transmitter or Amplifier...

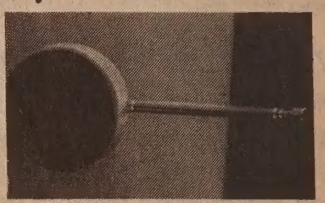


Crystal Transmitter- T-2501-Uses any sensor. Broadcasts to your scanner up to ¼ mile away. No external wiring or power supply. Small and lightweight. Costs only $89.95.

M-1201 Amplifier–Extremely sensitive. Uses any sensor. Use headphones to listen or cassette to record. Excellent for the hearing impaired. Can be used to amplify phone lines. 9v battery operation. $89.95.

MicroEar is a line of powerful microphones that magnifies sound a thousandfold

Or Try These On...



T-25001 Disc Transmitter–Magnifies sound and then broadcasts them to your scanner. $199.95

RE 8000A Processor Adapter–Plugs directly into any cassette recorder to record whispers from a distance. No cables. $69.95

MicroEar Catalog -- $3
Free with order
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Jacksonville, FL 32246

ORDER FORM

ITEM DESCRIPTION	QTY.	PRICE EA.	TOTAL
		SUB TOTAL	
		ADD UPS $5.00. FL. RES. ADD 6.5% SALES TAX	
		TOTAL	

Purchaser agrees to hold seller harmless for any actions resulting from use or misuse of any item.

NAME SIGNATURE

ADDRESS

All equipment is sold for security and property protection. Not for interception of any oral communication.

Send check or money order to ILIADIS • 1760 Dibble Cir. West, Jacksonville, FL 32246
Phone or Fax 904 641-9942

Medics Enroute

Monitoring Paramedic-to-Hospital Communications

Early morning is split by the yelp of a siren, a paramedic ambulance running full-out Code Three. It's a sound that drives scanner listeners to their radios, causing them to drop everything in the process, drawn by a cry that has come to mean only one thing: somewhere a life hangs in the balance.

The radio call follows quickly, as the siren dies, "Medic 21 on scene." Then all is quiet. Somewhere out there measures are being taken to preserve a shattered, failing life, but those measures are invisible to a scanner listener. Or are they? There is drama beyond the dispatch channel and it's found with paramedic-to-hospital communications.

HOW DOES IT WORK?

Paramedic ambulances are considered to be ALS (Advanced Life Support) units in most jurisdictions and are dispatched from a central point, usually the fire department communications center. BLS (Basic Life Support) ambulances are usually staffed by

By Laura Quarantiello

463/468 MHz frequencies...the most common stomping grounds for paramedics

EMT's (Emergency Medical Technicians) and are often privately run and separately dispatched. You'll want to keep track of both, but for most serious calls, the ALS units will be the ones to monitor. Listen for them on your local fire department dispatch channel. In larger jurisdictions you may find a separate paramedics dispatch channel in use.

The original call-out of paramedics occurs on the main dispatch channel. This is where you'll hear the type of call and address being given out. You'll also hear the unit call the dispatcher and advise "responding." Unless additional information is received on the call that must be relayed to the medics, things generally get quiet at this point. The next call you'll hear is "on scene." Now it's time to switch gears and radio frequencies, because the drama isn't over, it's just beginning.

ON SCENE

As listeners, our only link is the radio. Our only contact with the medical emergencies we monitor is through the voices from the scanner. Once on the scene, paramedics busy themselves with evaluating the patient, taking first steps to stabilize him and then secondary steps to make him ready for transport. Most of this is done in radio silence. With trauma patients -- those in critical condition -- paramedics may call the hospital before they've even finished the first life-saving steps. Clearance to use medications or other invasive procedures often comes from the physician on call in the emergency room. Often it's vital that paramedics consult with this doctor about the patient before any steps are taken.

In most areas of the country, the radio still serves as the link between paramedics and hospital. Eight MED channels in the 463 MHz band (paired with eight channels in the 468 MHz band) are reserved for these types of communications. Search these bands for the channels in use in your area and switch to them as soon as the paramedics arrive on-scene.

If no contact is made with the hospital while at the scene, paramedics will usually call shortly after going enroute. The purpose of the call is to advise the hospital of what's coming their way, to verify treatment procedures and to allow the emergency room a chance to prepare any necessary equipment or notify physicians before the patient arrives.

ENROUTE

So, what does a typical radio exchange sound like? Initial contact is sometimes begun with a tone, to alert the hospital of an incoming radio call. At other times, a voice call serves the purpose. "City General, Medic 21 with a mild status trauma." If the MED channels are used, you'll hear this call on the paramedics frequency. The reply will come on the paired hospital frequency, so have both programmed into your scanner and be ready to switch back and

forth quickly in order to hear both sides of the conversation.

"Medic 21, this is City General. Go ahead," is a typical reply from the radio nurse. The paramedic running the radio will then give the hospital a quick sketch: "City General, Medic 21 is enroute to your facility with a mild status trauma. Mechanism of injury was a two car vehicle accident. Patient was the restrained driver of one of the vehicles. On primary survey, patient is suffering from a two inch laceration to the head, plus a deep laceration to the hairline area of the scalp. Patient complains of pain to the neck and upper back area, between the shoulder blades. He also reports pain to the upper left quadrant of the abdomen..."

The paramedic will report his secondary survey findings, plus relay vital signs and any treatment that has been undertaken. The radio nurse will ask any pertinent questions, suggest further measures to be taken before arrival, consult with the ER physician if necessary and give the paramedics a room assignment to be used on arrival.

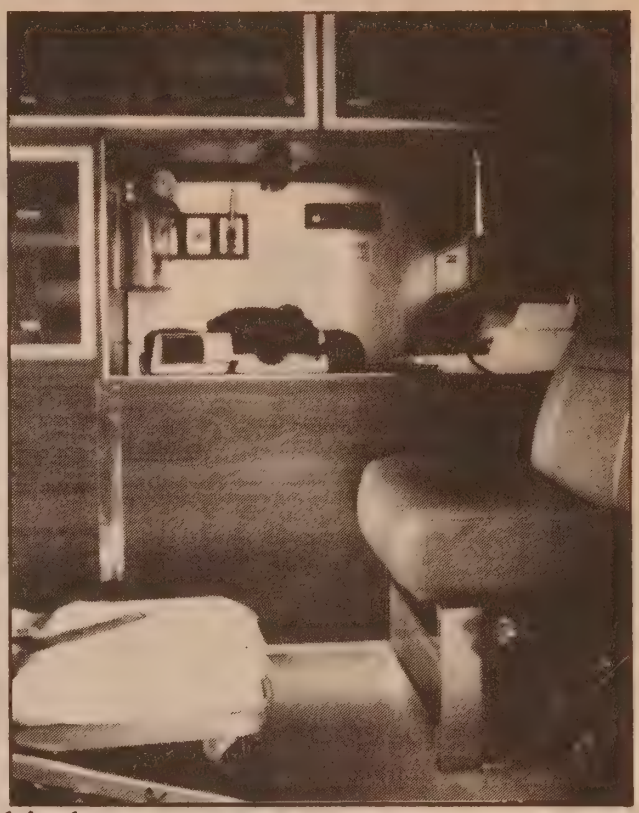
Sound pretty routine, maybe even boring? You could say that, until the patient is a full trauma case with CPR in progress. Then the communications become terse and strained as life-saving measures are discussed and undertaken. Contact is usually constant during the transport of a critical patient, right up until the medic rig pulls in front of the ER doors. It can be some of the most harrowing listening you'll ever do.

OTHER FREQUENCIES

Your hunt for paramedic communications should always begin with the 463/468 MHz frequencies. This is the most common stomping ground for medics. You may also find transmissions occurring on channels within the 154-156 MHz band. A new and vital place to check if all else fails (and even if it doesn't!) is the cellular telephone band. Most ambulances are equipped with the 800 MHz wonders and paramedics are apt to pick up the phone if the radio is busy. Take it from me, there's nothing like monitoring every word said in the ambulance as the medics keep an open line to the hospital while transporting a critical patient. There are no real guidelines for finding cellular paramedic communications, though if the ambulance is close to your location you can try searching the cellular mobile frequencies for the transmission and then adding 45 MHz for the cell site freq. (Remember that listening to any cellular transmission is illeagal under federal law.)

IN SERVICE

That yelping siren, the call that brings us to our scanners, signals the beginning of interesting communications to follow. Don't forget that the communications action doesn't end when the medic unit arrives on scene. In fact, it's just beginning. Stay with the radio, try the paramedic to hospital frequencies and I guarantee that a new world of emergency medicine will open up to you.



Standard Nationwide MED Channels

Channel	Hospital	Paramedics
MED 1	463.000	468.000
MED 2	463.025	468.025
MED 3	463.050	468.050
MED 4	463.075	468.075
MED 5	463.100	468.100
MED 6	463.125	468.125
MED 7	463.150	468.150
MED 8	463.175	468.175

EMT BAND

Mobile – 825-849 MHz
Base – 869-896 MHz

QUICK GLOSSARY

BAG – Intravenous line
BP – Blood pressure
D5W – Dextrose and water solution
DIAPHORESIS – Sweating
EKG – Electrocardiogram (also ECG)
LANDLINE: Telephone
LINE – Slang for intravenous tubing
MVA – Motor Vehicle Accident
SYNCOPE – Fainting (also syncopal episode)
TKO – To keep (vein) open for the possible administration of further medication

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- *Frequency range: 29–54, 108–174, 406–512, 806–956 MHz (less cellular)*
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TO ENTER OUR CONTEST FOR A SPORTCAT jot down the answer to these questions on a postcard along with your name, address and phone number to National Scanning, Box 360, Wagontown, PA 19376. Only postcards will be accepted. The winner will be picked randomly from all the correct entries. All correct answers can be found in this issue of National Scanning. Contest entries must be received by December 25, 1994.

1. *Now that cellular-capable scanners and converters are no longer legally available in the United States, what's a scanner listener who wants to get these 800 MHz frequencies to do (aside from modifying their scanner models) ?*

2. *According to Les Mattson , what does one need for some peace and quiet?*

3. *What business broadcaster did Brian Webb visit this past spring? In what town is it located?*

4. *List three sources for finding frequencies suggested in a feature in this issue?*

5. *What nifty, pre-programmed innovation does Uniden's new BC 178XLT offer?*

GOOD LUCK!

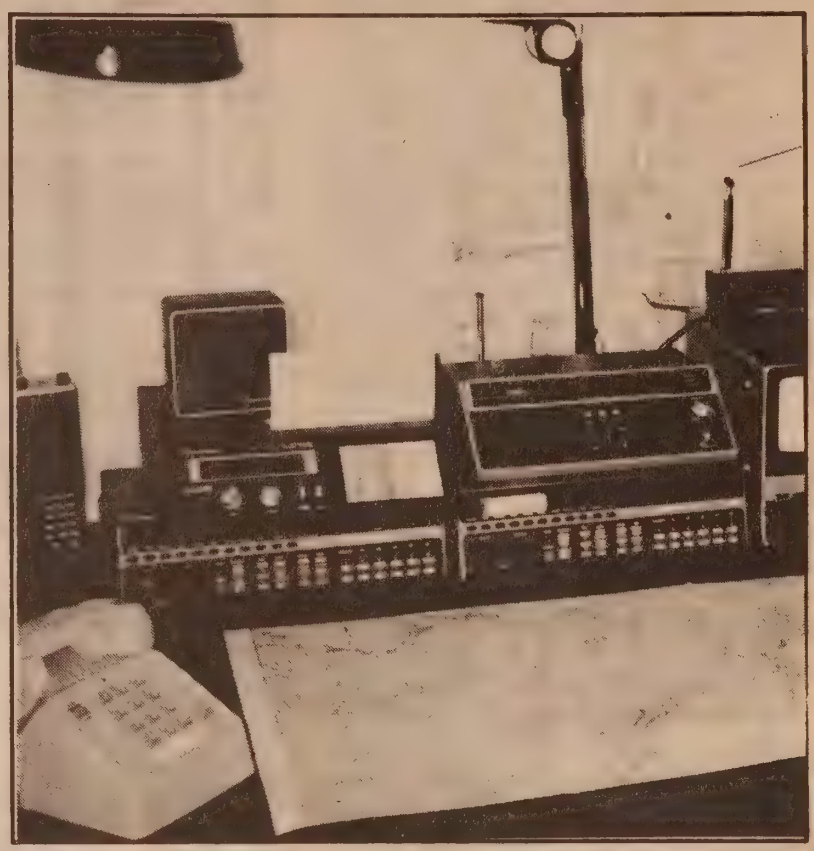
...47.42...123.450...

...866.0125...

A Frequency Primer

Where and What to Know

BY LES MATTSON



Many owners of new scanners are perplexed with the question of how and where to obtain frequencies to enter into their scanners. In this article, we will endeavor to offer you our suggestions for finding new frequencies, using the methods shown below:

- Scanner books
- Radio shop dealers
- Service search method
- Computer downloads
- Letter to dispatch center
- Frequency allocation charts
- Towing services
- Frequency counters
- Local police dispatch
- Frequency databases
- Antenna length
- Air shows
- Log books
- Ham radio club
- Local firemen
- Search method
- EMTs Open house
- Road maps

A Word About Frequencies

First off, frequencies and channels are two very different things. They are not interchangeable. This is a very popular misconception. You program a frequency INTO a channel. A frequency always uses a period separating the digits. A channel NEVER uses period. Channels are numbered according to the capacity of a scanner, always beginning at one usually ending at 400, the most popular numbering system in use.

Secondly, aircraft frequencies are different than the public safety frequencies due to the fact that aircraft use the AM mode. Many scanners are not manufactured to receive AM. There is no practical way of modifying a scanner to accept AM if it wasn't made that way in the first place.

Certain airport (that's airport, not aircraft) frequencies are in the FM mode. These frequencies may be communications center, operations or maintenance or fire/rescue. These may be interesting frequencies to monitor. The everlasting question is, which airport frequencies are AM and which are FM. Most inexpensive scanners are automatically programmed with the appropriate mode for you.

Many newer scanners, however, have user-changeable modes. I suggest you program ALL frequencies concerned with aircraft in the AM mode. Whenever you hear a garbled, unintelligible signal, merely change the mode and see if the transmissions don't come in clearer. Many inexperienced scanners worry too much about this, when it is usually very simple to change the mode whenever necessary.

This tip of changing the mode whenever you are receiving a garbled signal extends to FM as well. Certain frequencies are Narrow Band FM (NFM) while others are in the Wide Band FM mode (WFM). If you are receiving sound but not very clearly, try changing the mode before deciding to press the lock-out button!

47.42, 123.450 and 866.0125

Have you noticed how some frequencies are written in only four

digits while others use seven digits? What's the difference? What's correct?

The low band VHF frequencies are usually noted by using only four digits. That is because the digit is always zero and therefore it is a time saver not to indicate it. The American Red Cross uses 47.42. In a columnar list of five digit frequencies, it is often written as 47.420 so that the frequencies will line up better.

VHF high band frequencies, like 123.450 (the easiest of all frequencies to remember) which is often used for aircraft to aircraft chit-chat, use six digits.

The nationwide police calling frequency of 866.0125 uses seven digits. It may be possible to see the frequency erroneously listed as 866.010. No problem! Your scanner can monitor either frequency just as well. So anytime you see frequencies rounded off in a listing, or on your scanner's display panel, don't panic, it hardly matters.

BUT, if you are submitting frequencies for publication or sharing with a friend, it is expected that you will indicate the acceptable method of using all seven digits in the above example.

The Old Days!!

The easiest method of finding frequencies was built into the most popular scanners of the mid 1980s. The Bearcat Model 300 scanner had many features that were ahead of it's time. This was the top-of-the-line scanner and it had a SERVICE SEARCH feature that made scanning a real joy!

Picture this. Ten buttons running across the front of the scanner. They were marked: police, fire, marine, ham, emergency, telephone, government, forest, industry and transportation. Yet aother button was marked "AIR."

Uniden had built into this scanner, the frequencies allocated to the various services covered in this Service Search feature. Just by pressing the "Forest" button, the scanner automatically scanned all the frequencies allocated for the forestry service. The same for "Industry", and so on. And, do you know something? I stall have one of these marvelous scanners in my shack, working every day! (Ah! The good old days!)

NOTE: Some of the modern day Bearcat scanners utilize the Service Search feature, like the BC 760XLT, the SportCat and BC 220 models. This is a very handy feature.

Radio Shop Dealers

One of the best but often overlooked sources for local public safety frequencies may be the radio shop where you purchased your new scanner! Most of them have a photocopied sheet of frequencies for police, fire and ambulance agencies in the particular area in which they are doing business. Ask them, they will usually give you such a sheet of frequencies for nothing, if you have purchased a scanner from them, or for a nominal cost if you aren't already a good customer.

A word of caution here. Don't gamble the old homestead on the accuracy of the frequencies on the handout. Some may be a bit out-of-date or prepared by someone with little regard to accuracy, But, it is a good starting place.

Police, Fire and Ambulance Frequencies

Do you know any of your local firemen? He usually has a wallet sized card listing all the fire frequencies, district numbers and fire apparatus numbers used in his area. Ask him to loan you his card to get it photocopied. You will then own an invaluable tool for monitoring the fire bands. The very same idea is appropriate to your local ambulance drivers and EMTs.

The more difficult agency to deal with is the police department. Perhaps your best bet is to learn the name or names of some of the radio dispatchers. Try to set up a "chance" meeting with one of them and ask for the frequencies used. Or, visit the dispatch room in the early morning (7 to 10 AM) when things are more relaxed and ask the dispatcher on duty if he can help you obtain the police frequencies used. Please do not open the door of a parked squad car and slide over to better view the police radio gear and listing of frequencies, however. (This is frowned upon in most circles.)

Does your automotive garage or gas station have a tow truck (wrecker, flat bed)? Believe it or not, they can often be a good source of your public safety frequencies. Some even ride around in their wreckers, using a mobile scanner to beat the competition to the accident scene, therefore getting the tow job and the repairing or storage charges. It is in their best interest to know all the public safety frequencies used in your county.

Local Ham Radio Club

Don't overlook the county Ham radio club for public safety frequencies! A large percentage of hams also monitor scanners. Look for publicity articles in your county newspaper and get the name of a member of the ham radio club and contact him. Use the White Pages of your telephone directory for his address and telephone number. Contact him, tell him what frequencies you need, and the odds are that he can read you the frequencies over the phone.

Tours, Parades, Open Houses

Many fire companies have open houses, parades, etc. when they obtain a new piece of fire apparatus. Arrange to be on hand where the visiting fire apparatus are "staged." Take a small pad and pencil or good camera with you. Look for where the two-way radios are installed in the cab of the trucks. Often there will be a list of frequencies taped near the radios. Copy these down or take a close-up picture of this list. One thing you can be certain of, these will be the most up-to-date frequencies available from any source.

Look for your county mobile com-

munications van, bus or truck. They usually have a green light on top of the vehicle for easy identification at night. Look for the frequency listings often located under a sheet of plastic on the table top or taped to a wall in a central location. Get some good photos of this info and you'll have hit a frequency gold mine!

Air Shows

Many people are avid monitors of the aircraft band, military and commercial. These are difficult frequencies to obtain as well. Your best bet is to visit any air shows in your locale. U.S. Air Force bases often hold open house, especially in the summer months. Many of the aircraft on display may be toured and, using your pencil and pad or camera, you can get a bunch of great aircraft frequencies.

Don't stray too far from the display area and do not crawl under rope boundaries, or enter areas marked "Off Limits" or "No Cameras Allowed", etc. with your loaded cameras. Make no attempt to conceal your camera at any time.

Scanner Publications

Space prohibits us from listing all the many fine scanner books that are available.

Advanced Frequency Finds

There is another way to find frequencies. It is the method that I personally oppose for beginning scanners, and that is using the scanner's "search" feature. Here is one heck of a good way to get side-tracked, disappointed, confused, etc. I would suggest you not use this method of obtaining frequencies until you have been in the hobby for at least a year, if not longer.

In this method you set your scanner to an upper limit and a lower limit of a small range of frequencies and press the search button or the up and down arrows. Each time your scanner comes across a noise, or a frequency, it will lock-on there until the conversation or "birdie" or ignition noise or data channel, goes away. So, you may have a frequency on your display panel. But, you don't know what it is. Many times, you won't even know what type agency it is.

You may have come across an "image frequency" or you may have come across an "official frequency." An off-frequency is a false frequency. It may indicate the frequency is 154.315 when the actual true frequency is 154.310.

Computer Downloads

Have a computer? Well, if you have a computer and subscribe to one of the many computer services or to a computer bulletin board (BBS), you may be able to download frequencies

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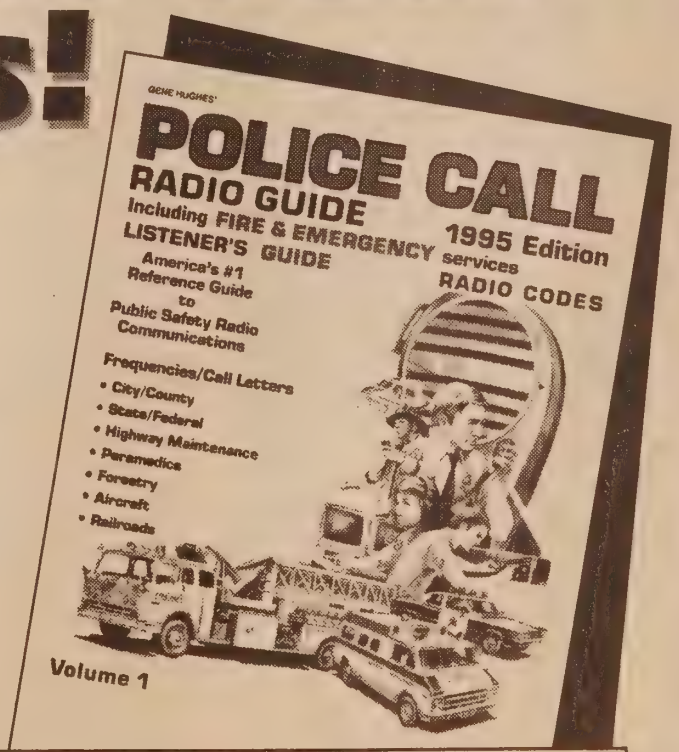


*More People Buy **POLICE CALL** Than All Other Frequency Guides (VHF/UHF) Combined.*

at a small charge. Bear in mind that some of these may be suspect, as far as accuracy is concerned.

There is also a tool known as a frequency counter, a more disruptive name would be a frequency "finder." This is about the size of a handheld scanner, with a similar antenna length and a display. As you approach a radio being transmitted, the frequency counter shows the frequency being broadcast on the display. It is also useful in a vehicle, using the roof mounted scanner antenna for longer range.

Antenna Lengths

An examination of the length of antennas on a vehicle can give you the approximate band of frequencies being used. A rule of thumb is that, the shorter the antennas, the higher the frequency being used. Thus, a 50" long antenna would be used for low band, around 30 or 40 MHz. Conversely, a stubby 4" long antenna on the roof of a vehicle, would indicate a UHF frequency, in the 800 MHz range. (Mostly cellular.) There are "disguise" antennas on the market, however, that are meant to confuse us citizens, by using the incorrect length for the frequency actually being used.

"Fishing" for Frequencies

When we get to the advanced stages of frequency finding, it is a feeling similar to fishing. We are always searching for the Big One. That "lunker" frequency that is so elusive. So, we try all kinds of methods of pulling him in. What a thrill to verify a NEW frequency! But, every fishing trip does not result in a big catch. Many hours may be spent in locating just one new frequency.

The really advanced methods of frequency finding involved tape recorders. Tape recorders can be directly wired to the scanner, so that no outside noise is heard, like conversation, household sounds, TVs etc. You turn on your scanner prior to going off to work, program your scanner with one frequency you most want to study, turn the recorder on, and when you get home that evening, check the recorder to see what, if any, transmissions took place. Since the tape recorder only records when there is a sound present, it will just sit there between actual transmissions.

Tape recorders often capture those elusive station call letters that are a big help in verifying frequencies. And, if the call letters are read too fast or garbled, you can re-wind and replay that part of the tape until you get all the letters figured out. Many public safety agencies will give their call letters at noon and midnight, at least. Some frequency list include the call letters assigned to each frequency. If you have the call letters, you can verify the frequency by comparing it with the frequency listing and you will know in which town the frequency is used.

The "count" feature is used in somewhat the same fashion. Choose a seldom-used frequency. Turn on your computer, program this frequency, return the counter to zero, and skip off to your place of employment. Upon your return, press the button and discover how many transmissions, if any, took place in your absence. (Caution: Outside interferences of some kinds might effect the counter into giving a false reading of transmissions when none were actually made.) But, all in all, this is a valuable feature for discovering how active a particular frequency is or isn't. If it indicates being a busy frequency, then you can keep it in your scanner. If it is not busy, you might as well replace that frequency with one that IS active.

One of your most important tools for verifying frequencies is the log book. You simply must have a method of recording notes of the many, small things you hear on a particular frequency, that taken together, will direct you to the correct agency that is using the frequency.

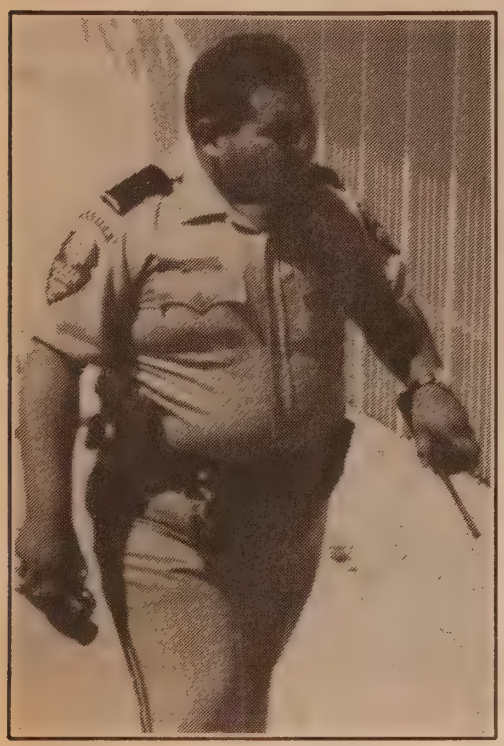
A three-ring binder and lined white paper is a good start. Get a ruler or straight edge and a ball point pen and measure off columns for channel number, frequency, call sign, PL tone, Agency, and a large column for your notes. Write small to conserve space. Enter street names you hear, officers\dispatcher's names heard, ect. All of this information will eventually be part of your evidence useful in providing what agency goes with which frequency.

You will need other specific tools to aid you in verifying the frequencies that you hear. One such tool is a frequency allocation chart that shows the frequencies assigned to various agencies. Acceptable ones are found in many scanner frequency guides. It would be odd, but not unheard of, for a police department to be heard using a forestry-assigned frequency. Usually the various agencies stick to the frequencies assigned and licensed to them. If you enjoy monitoring ambulances, look up frequencies assigned for their use and program them into your scanner. After a period of time, your log book notes will show you which ambulance frequencies to keep and which are inactive in your area.

Area road maps are a good source of information for typing down the location of the agency you may be monitoring, but can't verify. Keep notes on the road names and intersections you are hearing, and gradually you will be able to narrow down the location of the agency heard. A road map should be examined to find a city that has these same road names or intersections. Sooner or later you can claim to have verified the agency location. This is sometimes a very laborious process. It is often detective work, hard, dull, slow. A lot of patience is required.

Be aware of the fact that most public safety frequencies are shared with agencies in nearby states or even nearby counties. So, before you claim to be bringing in a police department at the other end of your state, be certain that you aren't monitoring a police department much closer to your location.

Good luck and happy monitoring!!



Supervisor Gerardo Santacruz Moreno on the scene of a burglary

TIJUANA'S FINEST

A Look at a Mexican Border Town

By Norm Schrein

When Chuck Anderson of San Diego and Rogelio Verber of Tijuana first set up a radio communications system for the Tijuana Police Department some years ago, they probably had no idea then of how vital their labor would be to this Mexican border town. Since then, many pieces of communication gear have come and gone, some of it disappearing rather mysteriously. According to Chuck, "First the handheld radios disappeared, then the mobiles." The original General Electric repeater systems installed on San Antonio Mountain are still functioning and serving the city quite well. I rode along with two of Tijuana's finest, Supervisor Gerardo Santacruz Moreno and Officier Jose Luis Lugo Baez, they told me that they depend on their radio equipment heavily. In fact they say they have an ear tuned to the radio during every minute of their watch.

Some Tijuana Background

The Tijuana Police Department has a new director. He is Victor Manuel Vazquez Fernandez, a former judge and attorney. His predecessor, Fredrico Benitez Lopez was cut down in a hail of gunfire on February 24, 1994. Director Lopez was responding to the airport on the report of a bomb. The report was just a setup and both Lopez and his bodyguard were ambushed while in route to the call. "No one knows who or why they were shot," says Gerardo, my host for the day, "But I was the last one to talk to him before the incident, and I did it via my radio. Five minutes later he was dead."

Tijuana has all the trappings of a border town. The main street of town plays to the thousands of tourists who come daily, but just off the main street is a part of Tijuana that most tourists do not see. Known as the "Red Zone", this is an area of approximately 150 bars. "We are constantly making arrests here mostly for fights and robberies -- all day and all night." In fact, on the weekends it is not unusual to see six hundred arrests in the "Red Zone" alone. Other crimes worthy of note in Tijuana, according to Gerardo, are graffiti, sex offenses, drugs, burglaries and traffic violations.

It is not unusual to see high speed chases in Tijuana either. Gerardo noted that, "A problem with the cars is that they run away from the police. This happens all day, every day. Many times these cars contain illegal people and drugs. Sometimes the cars are coming from the U.S. to Mexico. In the United States they do not want to stop the vehicles because they might make an accident. Once they come here they stop. They have to stop."

Other policing problems include gang members from the U.S. who come to Tijuana. "They bring in guns and knives, and they come to fight on the weekends," Gerardo said. San Diego's Naval bases provide many tourists in the form of sailors who come to town to have a good time. For the most part, they do not cause the police a problem, except for those who drink too much and get into fights. When they are arrested by

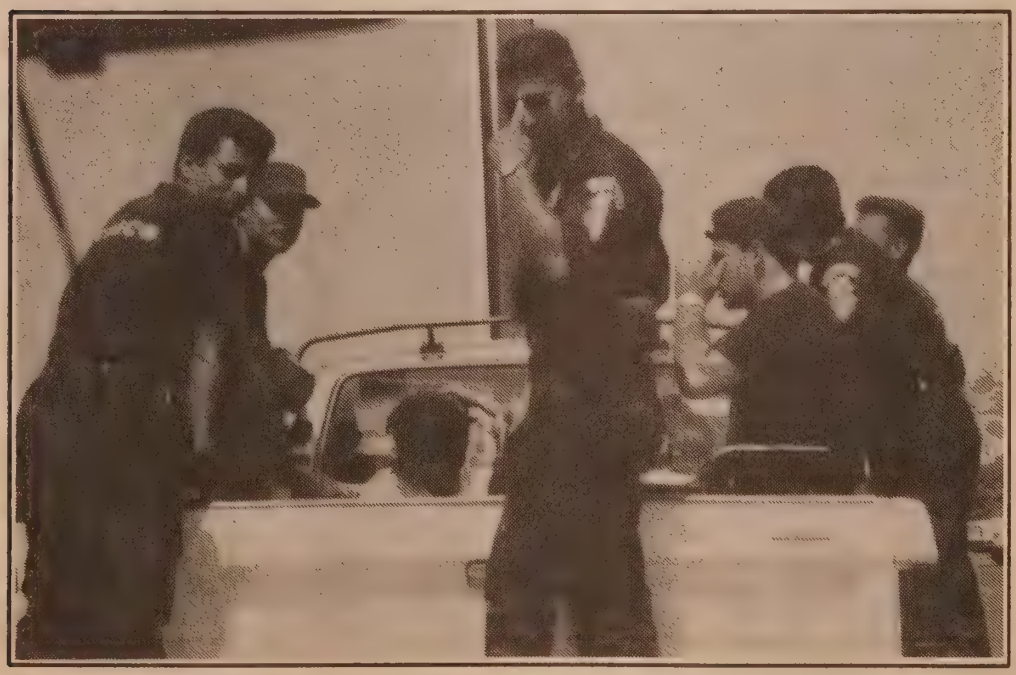
Officers respond on the report of a burglary

TIJUANA'S FINEST

Tijuana Police officers respond on a burglary call

Tijuana Police, they plead for them to let them go with a warning, not because they are afraid of the police, but they are afraid of the consequences they face when the Shore Partol has to comes to pick them up in Tijuana.

Gerardo has seen more than his share of violence during his eight years as a police officer. On seven occasions, he had to shoot someone and on another occasion he was shot. One of the shootings involved Gerardo and another man, who had just one week earlier, gotten out of prison after serving a sentence for murder. The man was burglarizing the home of a federal judge when Gerardo was dispatched to the scene. "He saw me and tried to shoot me, but I shot him first. He did not want to put down the gun. He had been in the house and had gotten a lot of jewlery and other valuables. When I saw him, he was outside. First, he shot one time in the air. He was trying to get out of the garage, so I went into the garage. I went in front of him and he shot at me. I took cover behind the wall. Then I shot three times and hit him twice. He was hit in the chest, but would not drop the gun. He stood there and held his chest. We just stood there facing each other. Then, after about two minutes he started bleeding from the mouth, then he fell down." The man was using a 357 magnum revolver and Gerardo was using a 9 mm automatic. The burgler died two days later in a Tijuana hospital. Asked if he was scared during the shooting incident, Gerardo replied, "No, because it was not the first time for me."

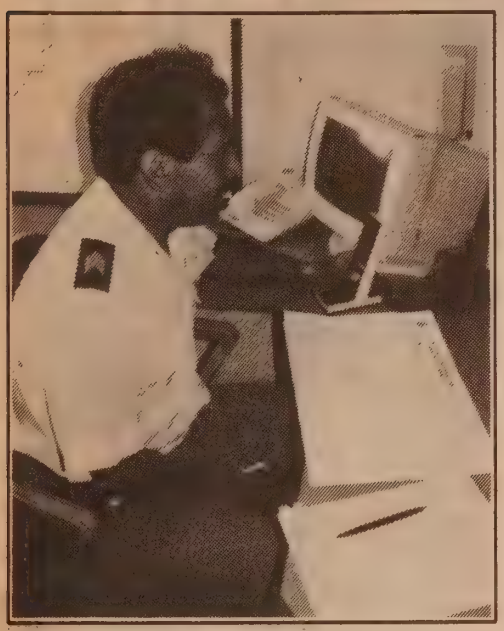


Tijuana SWAT team with drug smugglers arrested near the US Mexican border

The Matter at Hand

All of a sudden, our quiet patrol became an emergency run across the main and back streets of Tijuana. Weaving in and out of traffic, some of which refused to stop, they headed up towards San Antonio Mountain to a residential area of Tijuana. Not only were these two officers making an emergency run, but several other car loads of officers with lights flashing and sirens screaming, were on the way to the emergency. According to Gerardo, they had a report of a burglary in progress with people inside the house. The person who called in the complaint was a female, and they did not know if she was in danger or not.

When they arrived, a half



Radio Dispatcher for the Central Zone of the Tijuana Police Dept.

TIJUANA

dozen officers scaled a wall that surrounded a courtyard. Soon it became apparent that the burglary involved a house that had been previously sealed by federal police in a drug case. Apparently, there was no burglary as most of the furnishings and other property had been stolen earlier. Instead, the probable burglar was a vagrant looking for a place to sleep. When police approached, he fled.

After the burglary call, Gerardo and Jose stepped back into their unit (#1102) to continue the patrol. They checked on another unit who made a traffic stop. As they patroled, they kept their ears tuned to their radio awaiting another call from "Central." While they waited, they patroled through the "Red Zone" for one last time before refueling their vehicle. Soon their shift would be over.

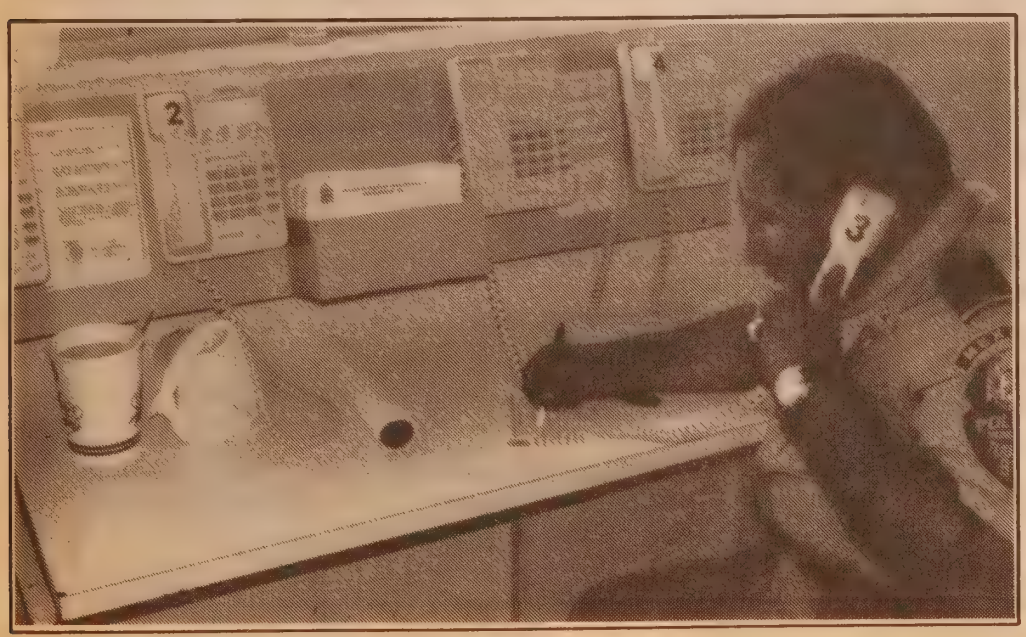
Tijuana police officers rotate standard shifts every fifteen days. According to Gerardo, the busiest shift is from 7 AM to 3 PM. He said, "That is because there is a lot of people about. If someone shoots at you, you can't shoot back because you might shoot an innocent person. At night, its very quiet. You can work very well. You can follow cars, have a pursuit, everything -- you can shoot everybody if they shoot at you. In the day, it is very dangerous because of all the offices, stores and banks open and with all the money. People who don't know the work think that night is dangerous, but it is really the day shift that holds the most danger."

It's a Wrap

Tijuana is a town with a population of over two million persons and a police department of only 1,300 officers. It has many of the same problems other border towns face -- illegal aliens, drug and gun runners and others who make an illegal living on the border. Much of what the officers encounter is violent, and they have to be prepared to face such violence. Gerardo and Jose put their lives on the line every day for the citizens of Tijuana as well as all the tourists that visit that city.

TIJUANA POLICE DEPARTMENT RADIO SYSTEM

BASE	MOBILE	ZONE
166.650	168.650	Central
166.300	169.225	La Mesa
166.425	169.325	San Antonio
166.525	169.550	Playas
166.725	169.800	Rosarito
166.625	169.825	La Presa
166.100	170.100	Mesa de Otay
166.675	166.675	Tactical (SWAT)
169.050	169.050	Bank Escort
161.300	158.625	Link to State Police
151.400	150.250	Link to Fire Department



Supervisor Gerardo Santacruz Moreno shows off one of the phone banks at Central dispatch

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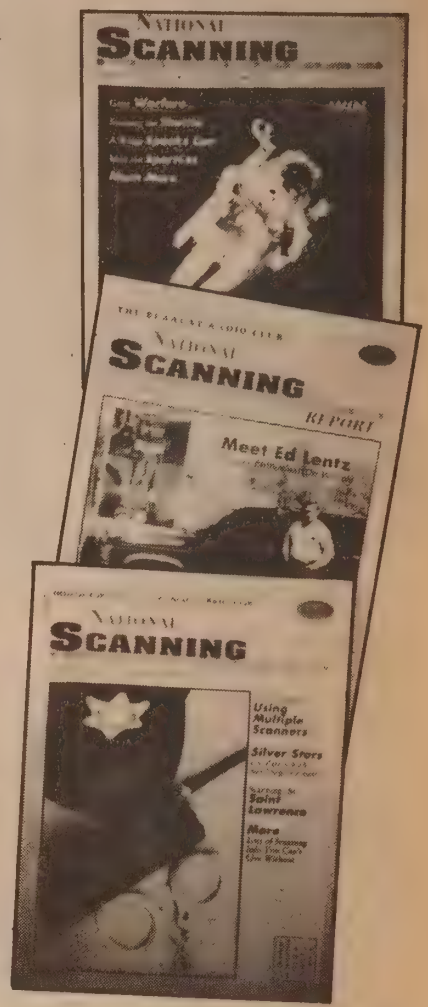

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MONITORING UHF MILITARY SATELLITE TRAFFIC

by Brian Webb

Introduction

Military monitoring is among the most interesting facets of scanning. Many listeners monitor military aircraft and ground stations, but few try to hear UHF military traffic from geostationary satellites. Though virtually all military satellite communications (SATCOM) consist of digital transmissions, clear voice is sometimes heard. Listeners on the West Coast and in the eastern third of the country can enjoy the intrigue of SATCOM monitoring without much difficulty. For monitors in the central U.S., however, hearing unencrypted voice is much more challenging.

U.S. Military Communications Satellite System

U.S. military traffic is relayed by a wide variety of satellites. Most of these spacecraft are in geostationary orbits while others follow 12-hour elliptical and low-altitude orbits. These satellites receive signals from Earth and retransmit them over frequencies ranging from the 248 to 20,700 MHz. The easiest transmissions to monitor are the geostationary spacecraft UHF downlinks.

The U.S. military downlinks UHF clear voice transmissions using a variety of geostationary satellites strategically positioned around the Earth's equator. At their altitude of 22,200 miles, these spacecraft move eastward at a speed which matches that of the earth's rotation. The satellites thus appear to hover over fixed points along the equator, greatly simplifying tracking and antenna pointing. The current complement of geosynchronous spacecraft relaying UHF voice traffic is given in Table 1.

Table 1. Geostationary Satellites Relaying U.S. Military UHF Voice.

Longitude (degrees)	Satellite Name	Launch Date
72.1 E	Marisat 2	76 OCT 14
72.5 E	LEASAT 5	90 JAN 09
73 E	UFO 2	93 SEP 03
172 E	FLTSATCOM 4	80 OCT 30
178.5 W	Marisat 3	76 JUN 09
177 W	LEASAT 2	84 AUG 31
105.7 W	Marisat 1	76 FEB 19
105 W	LEASAT 3	85 APR 12
100 W	FLTSATCOM 7	86 DEC 04
23 W	FLTSATCOM 8	89 SEP 25
15 W	FLTSATCOM 1	78 FEB 09

Four familes of geostationary satellites are used to downlink unencrypted UHF voice: Marisat, Fleet Satellite Communications (FLTSATCOM), Leased Satellite (LEASAT), and UHF Follow-On (UFO).

Marisat provided the U.S. military with its first operational UHF satcom capability. Three Marisats were built for COMSAT by Hughes Aircraft. Rather than being military spacecraft, the Marisats are owned and operated by COMSAT and relay both military and civilian traffic. The U.S. Navy leases the UHF transponders while the L- and C-band transponders are leased by civilian customers.

The second family of satellites are the FLTSATCOMs, which were built by TRW Systems Group for the Navy. Unlike the Marisats, the FLEETSATCOMs are owned and operated by the military and relay only military traffic. These spacecraft re- ceive transmissions from Earth in one section of the UHF band and rebroadcast them earthward in another.

Another class of satellites are the LEASATs. At some point in the FLTSATCOM program, the U.S. Navy became concerned that the FLTSATCOMs would eventually fail and there would be no spacecraft to replace them. The Navy subsequently contracted Hughes Aircraft to build and operate the LEASATs. These satellites receive terrestrial signals in the UHF and SHF bands and downlink them using UHF.

The UFOs are the fourth family of spacecraft. In 1988 the U.S. Navy awarded Hughes Aircraft a contract to build up to 10 UFO satellites to replace the aging FLTSATCOMs and LEASATs. To date, two UFOs are operational. Little is known about their UHF transponders except that the downlinks fall in the 248-270 MHz band.

Signal Characteristics

UHF SATCOM signals are weak. In spite of the relatively high transmitter power levels and high gain antennas employed by the satellites, the downlink signals are weakened considerably due to the long distance between the spacecraft and the listener. This decrease in signal strength is referred to as path loss.

The strength of UHF SATCOM signals is dictated by the listener's location in the satellite's antenna footprint. The Marisats, FLTSATCOMSs, LEASATs, and UFOs use directional antennas aimed directly at the Earth's center. Their antennas, however, don't illuminate the Earth's surface evenly. Most of the spacecraft's signal is concentrated earthward along the antenna centerline. As one moves away from the centerline, the signal strength decreases. Therefore, if a satellite is directly overhead, the monitor is in the footprint's center and the signals are strongest. Conversely, if a satellite is low on the horizon, the listener is in the fringes of the antenna footprint, and the are signals much weaker.

Receiving Systems

A typical UHF SATCOM receiving set-up consists of two sections. The first and most important is the receiver, which must be capable of scanning FM narrow transmissions between 248 and 270 MHz. Receivers that meet these criteria include the AOR AR1500 and AR-3000A; ICOM R1, R100, R7000, and R7100; Realistic PRO-2004, PRO-2005, and PRO-2006; and the Yupiteru MVT-7100.

The second section of the receiving set-up is the antenna system, which consists of the antenna, coax cable, radio frequency (RF) connectors, and mast. A receiving preamplifier is also used in many systems.

UHF MILSATS

A wide variety of antennas can be used to monitor UHF SATCOM signals. If a preamplifier is available, adequate reception can be had with a low gain antenna such as a groundplane or discone. The prefered method is to obtain the necessary increase in signal strength by using an antenna with gain, like a helical, log periodic, quad, or yagi. With the exception of discones and log periodics, none of these antennas are available as ready-made, commercial products. Therefore, many SATCOM antennas are homemade.

Helical antennas provide good gain and excellent bandwidth. Unfortunately, building a helical is an involved process and calls for a sizable investment in time and materials. Commercially-made log periodic antennas that cover the 248-270 MHz range are available. But since they were designed to cover a vast range of frequencies, antenna gain was sacrificed for bandwidth, resulting in a gain of 6 to 9 decibels (dB). Besides their relatively low gain, log periodics tend to be expensive, costing between $60 and $200. Quad antennas offer good gain, moderate bandwidth, and relative ease of construction. An article describing the design and construction of quads appeared in the May/June 1994 issue of this magazine. Although the feature is devoted to VHF high band quads, the design and construction information applies to building quads for the UHF SATCOM band. Yagi antennas have good gain, reasonable bandwidth, and are very easy to build, making them a good choice for the beginner.

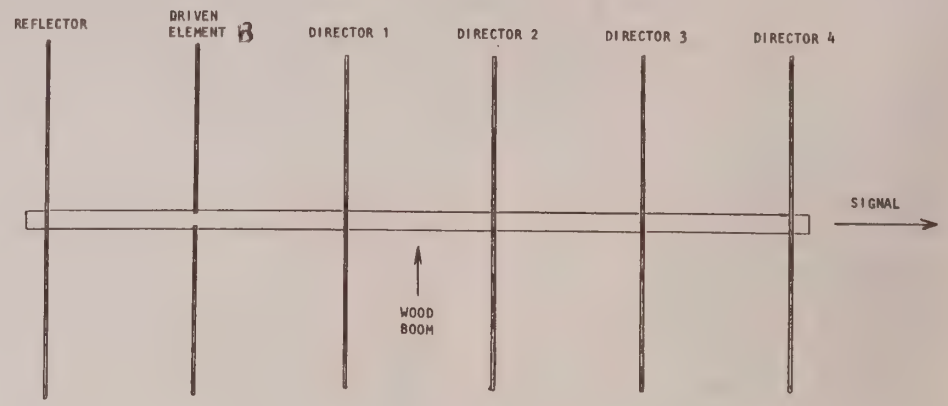

Figure 1. Six-Element UHF SATCOM Yagi Antenna.

Another component of the antenna system is the coax cable. Seemingly unimportant, the coax feeds the signal from the antenna to the receiver. Besides feeding the signal, the coax also absorbs a portion of it. This undesirable characteristic is called loss, and it's determined by the type, length, and quality of coax used. Coaxial cable comes in many types including RG-8, RG-58, and Belden 9913 with the amount of loss varying from cable to cable. As a rule, the thicker the coax, the lower the loss. However, thick coax is more expensive, stiffer and harder to work with, and harder to find in the form of ready-made cables complete with connectors. Regardless of the type of coax used, the longer the cable, the greater the loss. For cable lengths of 20 feet or less, RG-58 will suffice. For runs of 20 to 30 feet, a thicker cable such as RG-8 or Belden 9913 is recommended. Loss also varies with the quality of the coax. Although several manufacturers make coax such as RG-58, the quality of the

Continued on page 84

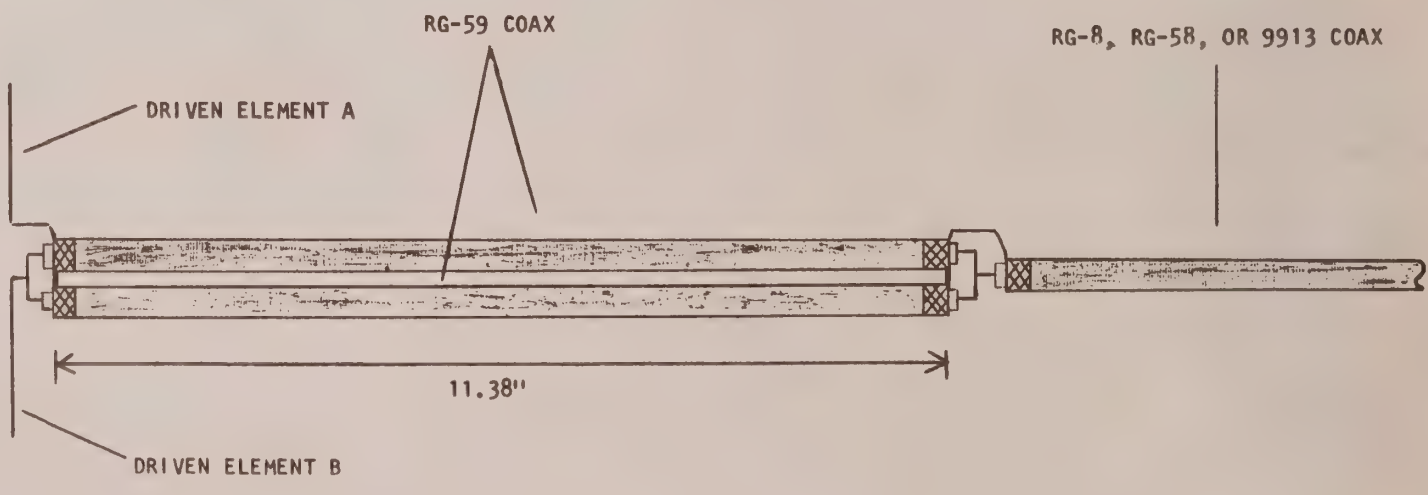

Figure 2. SATCOM Yagi Antenna Transformer.

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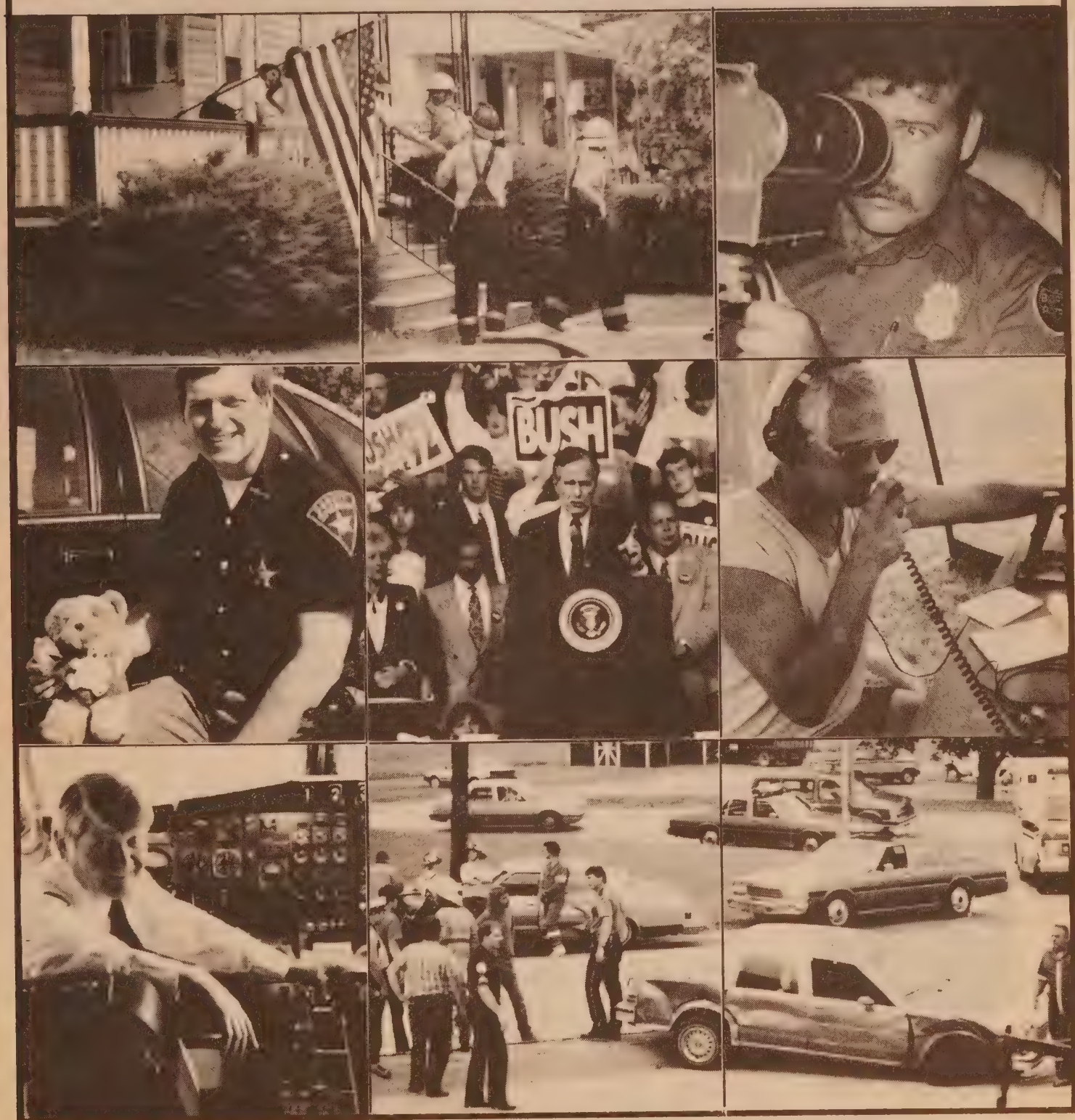

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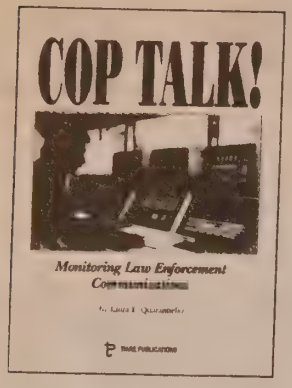

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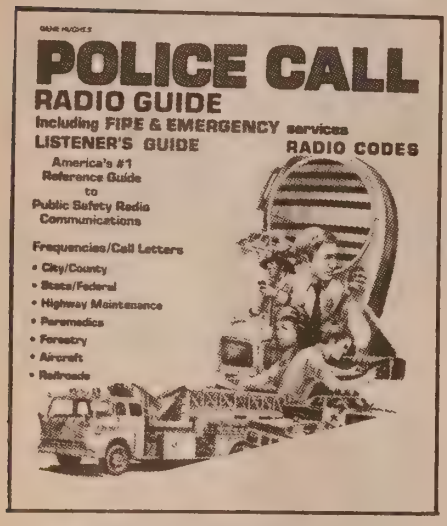

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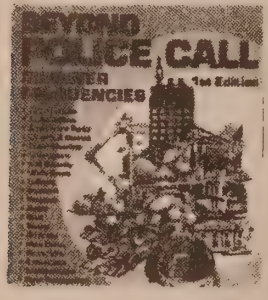

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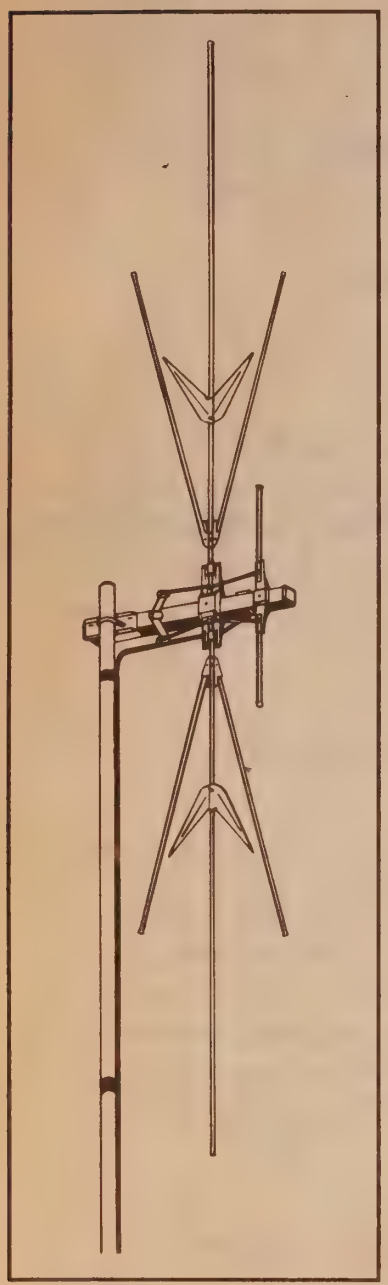

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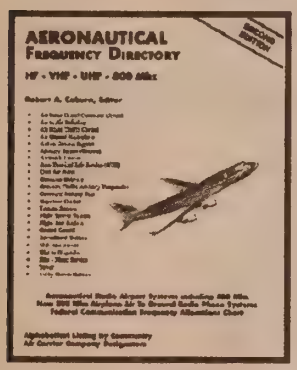

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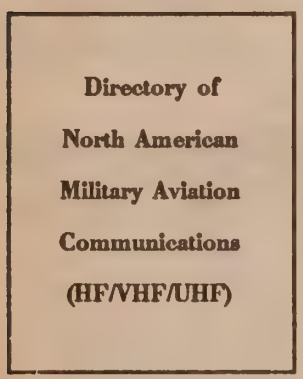


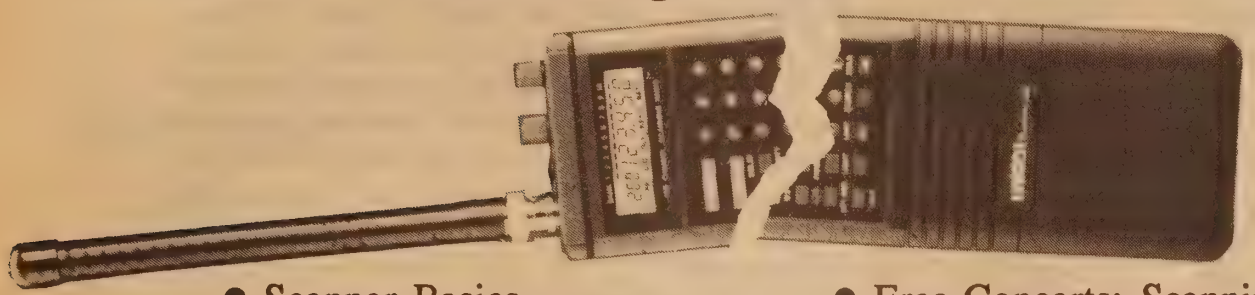
Directory of North American Aviation Communications

You can eavesdrop on the super-secret world of military aviation. This guide show you how with a solid intro section of maps and frequencies. Frequencies are arranged by location and by frequency with identity of user and comments listed. This guide comes in four regional editions. We ship according to your state unless otherwise indicated.
$24.95 plus $4.50 UPS or $ 2.50 postal bookrate.

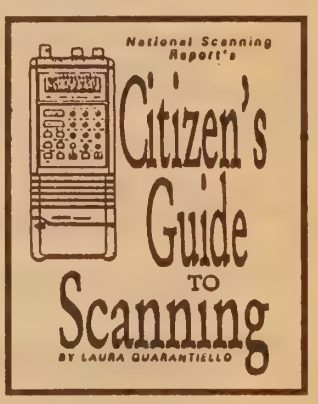
America's #1 Selling Scanner Book!

Citizen's Guide to Scanning

"If you don't have a copy, you're missing half the action."



- Scanner Basics
- Getting Started
- Hidden Police Frequencies
- Fire Communications
- Emergency Medical
- Scanning Aviation Disasters
- Cordless Phones: Knowing Your Neighbors Intimately
- Business Radio
- Hear Air Force One
- Monitoring the Military
- Maritime Communications
- Railroads
- 24-Hour-a-Day Weather
- Free Concerts: Scanning the Entertainment Industry
- FBI
- Hot Tips: Monitoring the News Media
- "800 MHz" Cellular Phones
- Listen to the Space Shuttle
- Coast Guard Search-And-Rescue Operations
- Fast Food Restaurants
- "Top Gun" Fighter Pilots
- Emergency/Disaster Communications
- Much, Much More!



Please send me *Citizen's Guide to Scanning* for just $19.95 plus $4.50 UPS or $3.00 book rate. I have enclosed a check, money order, Discover, Visa or Mastercard number and expiry date. (PA res. add 6% sales tax. Canadian res., please order by bankcard only.)

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Scanner Modification Books

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MOD-2 Speeding Search/Scan Rates: Pro-2004/2005
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Scanner Modification Handbook Volume 1

byBill Cheek

Add a switch. Clip a chip. Sometimes it's as easy as clipping a single wire. Let me give you an example. If you own a Radio Shack PRO-2004 all you have to do is locate a single component (there's a picture so you'll be able to find it for yourself) and cut one wire. As the author says, "Presto! Your PRO-2004 the [cellular phone bands] for which it was designed..." There are dozens of other modifications, some easy, other more difficult. But each is designed to help your scanner do all kinds of amazing things. Would you like to add 6,000 memory channels to your 400 memory channel scanner? How about speeding up the scanning speed? Mods are primarily for the popular PRO-2004 and 2005 series of scanners from Radio Shack but also include mods for the PRO-34 and PRO-2021 as well as the Uniden Bearcat BC 950XLT and BC200/205 XLT. Many can, with a little ingenuity, be adapted to other scanners as well. In all, there's 160 pages of hot mod info!

$17.95 plus $4.50 UPS or $2.50 book rate shipping.

Scanner Modification Handbook Volume 2

Bill Cheek

A follow-up to the enormously popular Scanner Modification Handbook by Bill Cheek. More modifications for the scanners listed above plus modifications for the Uniden BC 760XLT. More cellular 800 MHz frequency restoration proceduers, add signal strength meters, decode CTCSS tones, reduce interference, and other tricks of the trade.

$17.95 plus $4.50 UPS or $2.50 book rate shipping.

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Scanning Books

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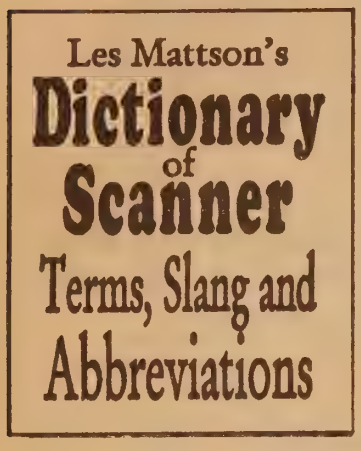
Tune In On Telephone Calls

Tom Kneitel, K2AES (New, 2nd Edition)

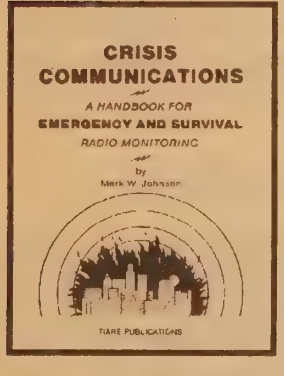
People will talk about almost anything on the phone -- and not have the foggiest notion that people are listening in. And you can listen. All it takes is a scanner. You don't need any fancy equipment, no technical expertise, to hear calls from homes, cars, ships, air-craft, offices, even trains. Tune In On Telephone Calls gives you the frequencies and tells you how to tune them in. This is an incredible 160-page book.
$12.95 plus $4.00 UPS or $2.00 book rate.



Dictionary of Scanner Terms, Slang and Abbreviations

Les Mattison

Every form of two-way communications has its own language, a kind of verbal "shorthand," used to get the message across efficiently and, in some cases, securely. Knowing the meaning of what you're hearing on the radio can mean the difference between understanding what's happening or sitting there scratching your head. Scanning authority Les Mattson has assembled an incredible collection containing thousands of terms and abbreviations and their meanings in the new *Dictionary of Scanner Terms, Slang and Abbreviations*. Arranged alphabetically, the subjects covered include law enforcement jargon, military slang, medical terms, fire, rescue, and even federal lingo. This book will improve your comprehension of all types of radio communications.
$12.95 plus $4.00 UPS or $2.00 postal bookrate shipping

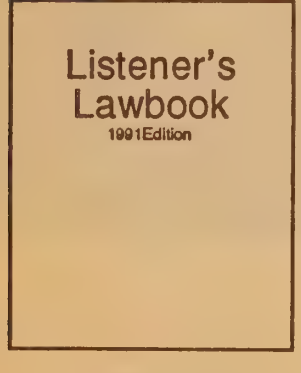


Crisis Communications

A Handbook for Emergency and Survival Monitoring

Mark W. Johnson

Hurricanes - Tornadoes – floods - mud slides - forest fires - chemical spills - gas leaks ... not to mention the latest scares about potential nuclear waste hazzards! Disasters are out there - waiting to happen! This book shows you how to monitor a crisis situation on your scanner or shortwave radio. Johnson discusses the equipment you need and shows you how to plan for emergency monitoring ahead of time. He supplies plenty of frequencies, too!
$10.95 plus $4.50 UPS or $2.50 postal bookrate



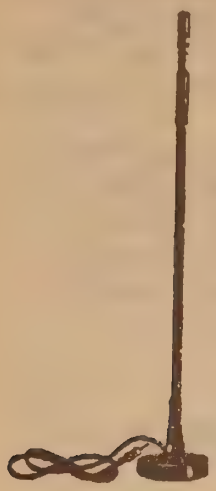
Listener's Lawbook

Frank Terranella, Esq.

Did you know that it's illegal to use a scanner from you car in some states? Or that some states prohibit the monitoring of cordless phone calls? Listener's Lawbook is a by-state listing of any legistation pertaining to radio monitoring. It also covers federal law concerning monitoring. Some commentary is given. Published in 1991 with addendum. 48 pages.
$9.95 plus $4.00 UPS or $2.00 book rate.

Mobile Antennas

Order Toll Free
Let us pay for your call!
See order form for details!



Hi-P by Tiger

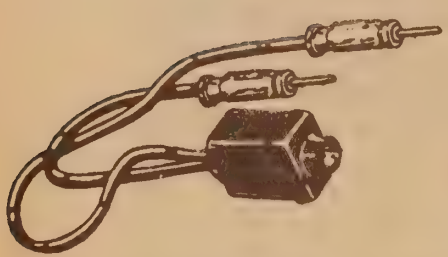
Don't settle for compromided reception when you can take your scanner on the road. Now the Tiger High Performance mobile whip is here! Utilizing an exclusive helix construction, this sleek, black, 24 inch fiberglass whip assures premium signal reception throughout the spectrum. Hear low band, FM, aircraft, high band, military, land mobile and cellular. Strong magnet mount is guaranteed to withstand interstate highway speeds, yet pulls off easily. Generous 12 ft coax included. Can also substitute for stock whips for indoor use where a large outdoor antenna is impractical.
$49.95 plus $5.00 UPS shipping

Steel Whip Mobile Antenna

This is a good magnet mount antenna for listeners who are looking for a lesser priced unit. Sturdy 18 in stainless whip is designed to cover the entire scanner range. Comes with 12 ft of cable. Easy on/off.
$27.95 plus $5.00 UPS

Windshield Mount Scanner Antenna

If you don't care for magnet mounts but still want to do better than the rubber duckey, try our thru-the-glass mount. Simply clean an area of windsheild and stick the antenna to the base. A companion coupler on the inside of the window does the rest. Designed for today's wide coverage scanners. Includes 15 ft of cable.
$34.95 plus $34.95 plus $4.50



Scanner Antenna Converter

Turn your car's AM/FM antenna into a full-range scanner antenna. No glueing, scraping or soldering. Just plug it in. Installs in seconds and does not interfere with regular radio reception. This is the cheapest way to get a mobile antenna for your scanner!
$15.95 plus $4.00 UPS

BNC

If your scanner does not except Motorola connections. $3.95

Antennas

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Scanner Beam

The number one rated directional scanner antenna. Unlike the Scantenna which recieves signals from 360° radius, the Scanner Beam zooms in on signals coming from the direction it is pointed in. Can be permanently mounted or put on an inexpensive TV rotor for incredible coverage. It's like a telescope for your scanner, discriminately increasing signal strength by a whopping 6-9 dB gain!
Great for blocking out unwanted signals as it attenuates (reduces signal strength) of signals coming in from the side. Local signals will still come in loud and clear. Balun transformer and mounting bracket included. Requires F-type connector on your coax.
$59.95 plus $9.00 UPS.

Particulary interested in 800 MHz transmissions?
Max 800 Ground Plane

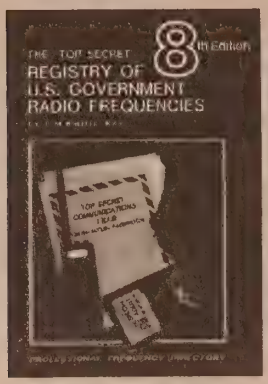
The Max 800 is one hot performer! It's especially designed to capture all the action on the cellular frequencies and other 800 MHz activity. Attaches directly to your handheld or base model in seconds. Can be mounted remotely using your coax. Please specify which connector, base or handheld, you desire.
$31.95 Handheld
$35.95 Base Model plus $4.00 UPS.

Hear every cordless phone and baby monitor for miles
Max 46 - 49 MHz Dipole

You'll be hearing lots of cordless phones and baby monitors with this one. Stock antennas can't compare with this conveninently mounted antenna. Works best when mounted high and sloping. The antenna is 10 ft. wide with 50 ft of RG8X coax ending in a BNC connector. Does pick up other frequencies, too.
$49.95 plus $5.50 UPS.

Government Frequencies

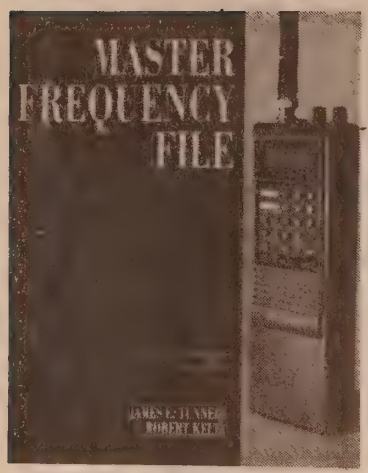
Order Toll Free
Let us pay for your call!
See order form for details!



Top Secret! Registry of U.S. Government Radio Frequencies 8th Edition

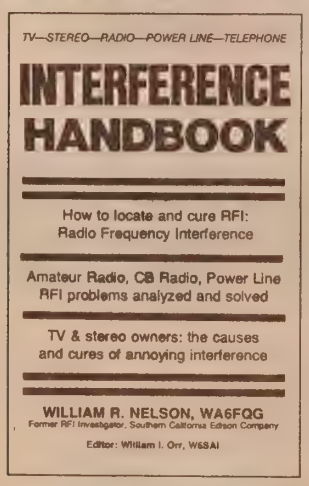
By Tom Kneitel

The book the U.S. Government doesn't want you to see! The largest collection of federal frequency information ever assembled in a single book. Federal agencies that use scanner frequencies and how to use your scanner to find them. This book made news and shook up Washington. This book is 268 pages of information.
$21.95 plus $4.50 UPS or $2.50 postal bookrate.



Master FrequencyFile

Are you interested in monitoring goverment agencies like the ATF, FBI, National Park Service, Marshall Service, DEA, IRS, Customs, Serect Service and more? This book is loaded with frequencies, callsigns and user ID's that makes it possible to listen to hundreds of sources. There's also a handy list of publications, organizations and institutions that can assist you in your radio monitoring skills.
Just $29.95 plus $5.00 UPS or $3.00 postal bookrate.


TV—STEREO—RADIO—POWER LINE—TELEPHONE
INTERFERENCE HANDBOOK
How to locate and cure RFI: Radio Frequency Interference
Amateur Radio, CB Radio, Power Line RFI problems analyzed and solved
TV & stereo owners: the causes and cures of annoying interference
WILLIAM R. NELSON, WA6FQG
Former RFI Investigator, Southern California Edison Company
Editor: William I. Orr, W6SAI

Interference Handbook

William Nelson

Nowadays, we are surrounded by electronic equipment, all of which is designed to make our lives better. It can also wreak havoc with our radios, TVs and stereos. The Interference Handbook shows you how to locate and cure RFI -- Radio Frequency Interference. From those annoying lines on your TV screen to the noise that makes your local police channel inaudible to "ghost" voices on your cordless phone, this book shows the causes and cures of annoying interference. Hundreds of subjects are covered: home, business, and industrial sources of RFI plus filters you can buy or build, case histories of difficult RFI problems solved, Cable TV problems, mobile interference and more. You'll be surprised at what's causing your agony and how easy it is to find a cure. An authoritative addition to any radio hobbyist's library.
$11.95 plus 4.25 UPS or $2.50 book rate shipping.

We accept Discover, Master Card, Visa, checks and money orders.

SS-70 SPEECH DESCRAMBLER/ SCRAMBLER

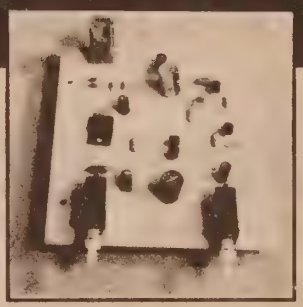
NEW!

Descramble those garbled "Donald Duck" sounds that you hear on your scanner. The SS-70 will decode most scramble systems in use on police, security, fire and business radio. In fact, it is regularly featured in many communications magazines.

You can also use the SS-70 to set up your own scramble system to communicate in privacy. It will scramble and descramble at the same time, making it ideal for two-way radio or telephone systems. Hook-up is easy and there are no controls or critical adjustments and voice quality is excellent due to the crystal reference used. An advanced, custom IC chip is used which contains a pair of: 10 pole low-pass filters, 14 pole band-pass filters, and double-balanced mixers! Sure, that's a lot of technincal jargon but this chip is incredible and will give you performance that hard to beat. The whole kit's a breeze to assemble, too. Power is supplied by a 9-12 volt source and a built-in 2-watt speaker amplifier makes scanner hook-up a snap. Don't forget to finish the job with our matching case set for a really nice look.

SS-70 Speech Descrambler/Scrambler Kit.....$39.95
CSSD Matching Case Set.....$14.95

TT-1 TELEPHONE TATTLE-TALE
AUTOMATIC TELEPHONE RECORDER



Our dictionary defines "tattle-tale" as "a tale-bearer; one who carries gossip" and boy, will the TT-1 do that.

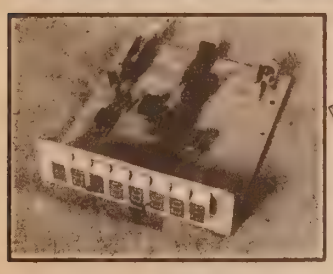
The TT-1 connects anywhere on the phone line and will control any standard battery-powered tape recorder (not included). The recorder automatically starts and stops whenever the phone is used. Both sides of the conversation are recorded with excellent fidelity. In fact, you can even play back the tape to our TG-1 Tone Grabber unit (see below) and read out what touch-tone numbers were dialed!

The TT-1 connects anywhere on the phone line and will control any stanrd battery-powred tape recorder.

Super-easy one-hour assembly and manual that tells you not only how to build the kit but why it works so well. Add our matching case set for a pro look.

TT-1 Telephone Recorder Kit.....$19.95
CTT Matching Case Set.....$14.95

TG-1 TONE-GRABBER



NEW!

Grab Touch Tone numbers right off the air with the TG-1 Tone-Grabber. Dialed phone numbers, repeater codes, control codes – anywhere touch-tones are used – your TG-1 will decode and read them out on an easy-to-read LCD display. A simple hook up to any radio speaker or phone line is all that is required. Since the TG-1 uses a "central office" quality decoder and microprocessor, it will decode digits at virtually any speed! An 8-digit LED display allows you to scroll through numbers anywhere in memory. To make it easy to pick out numbers and codes, a "dash" is inserted between any group or set of numbers that were decoded more than 2 seconds apart. The TG-1 runs off any 7-15 volt DC power source. For stand-alone use, add our matching case.

TG-1 Tone Grabber Kit.....$99.95
CTG Matching Case.....$14.95

UPS shipping is $4.00 for the first kit; $2.00 for each additional kit. Cases ship at no additional cost.

SG-7 RADAR GUN
WORKS ON THE SAME PRINCIPLE AS POLICE UNITS

"Clock" cars, bikes, planes, horses, kids, virtually anything that moves!

Works on the same principle as police units costing thousands more.

This low cost microwave radar uses the same principle as expensive law enforcements models us. You'll turn heads when you "clock" cars, planes, runners, boats, horses, bikes, races or virtually anything that moves. Speed readout is on two LED displays which can be set accurately (better than 1%) to show Miles-Per-Hour, kilometers-per-hour, or even feet-per-second. An earphone output allows you to actually hear the Doppler frequency shift of moving objects -- the theory upon which all radars operate. Uses two 13 oz. coffee or juice cans (not included) for an antenna and runs on 12 volts DC. Antenna unit can be remoted up to 300 feet away.
The SG-7 is easy and informative to build; our detailed manual not only guides you to a finished unit but tells you the how and why on how radar works. Calibration is as easy as pointing the SG-7 at a flourescent lamp!
Your SG-7 Radar Gun kit comes complete with a black ABS plastic case with "Speedy" graphics for a neat, professional look.
A great science fair project idea!

SG-7 Radar Gun Kit.....$99.95

VOICE ACTIVATED SWITCH

Voice activated switch (VOX) kit will provide a switched output when it "hears" sound. Use it to turn on a tape recorder automatically when people are talking in a room. How about having your hallway or porch lights turn on at a whistle, or better yet, the garage lights when you beep the horn? Kit runs on 6-12 VDC and drives up to a 100 mA load such as a relay or tape recorder motor.

VS-1 Kit.....$6.95

SPEAKER PHONE KIT
FOR HANDS-FREE COMMUNICATIONS.

Our speaker phone kit efficiently replaces a whole batch of add-on phone gadgets to give you what you really need in the shop or office -- the ability to answer incoming phone calls without tying up your hands holding a telephone receiver. Talk to a customer while looking up a price in a catalog. Talk to a friend while you make dinner. It's super for family and conference calling, too. Or, you can connect two kits for a completely hands-free intercom -- ideal for linking the shop with the rest of the house.
The real beauty of this kit is that 1.) it needs no batteries when it's connected to the phone line and 2.) it can be simply connected to the phone line by itself without using an extra telephone. Includes built-in electret microphone; just add your choice of speaker. To really make your kit look professional, add our custom matching case and knob set.

SP-1 Speaker-Phone Kit.....$29.95
CSP Case and Knob Set.....$14.95

UPS shipping is $4.00 for the first kit; $2.00 for each additional kit. Cases ship at no additional cost.

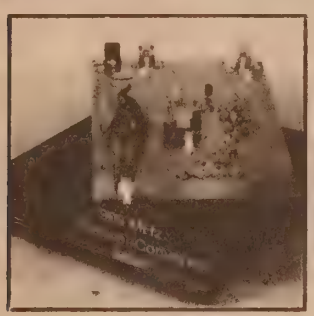
MUSIC LIGHTS
MAKES LIGHTS COME ALIVE TO MUSIC

This Christmas your house will really stand out. Great for anytime you want a dazzling, attention-getting sound-light display for your home, club or business!

Music comes alive! Hook up three different sets of lights to our ML-1 Kit. One set flickers in time to low frequencies, the other to medium frequencies, the third to high frequencies. Each individual channel is adjustable, runs on 110 VAC and controls up to 300 watts – enough even to drive spotlights, a truckload of Christmas lights, or what have you. Just like the rock concerts and Vegas shows.

ML-1 Kit.....$19.95
CML Case Set.....$14.95

800 MHz SCANNER CONVERTER KIT
TUNE IN ALL THE ACTION



NEW!

Nowadays, more and more police departments are moving their operations to 800 MHz frequencies – a range that many scanners can't receive. On top of that, cellular telephones are also up on 800 MHz. In short, 800 MHz is where all the action is.

The SCN-1 converts uninterrupted 800-950 MHz frequencies down to 400-550 MHz where your existing scanner can get them. Hook-up is very easy. Just connect your antenna to the SCN-1 and jumper the SCN-1 output to your scanner's antenna jack.

Power is supplied by any 9 to 15 volt DC source and the on/off switch conveniently switches the converter in and out of the circuit when not in use.

A handsome matching case set is available for a good looking project finish.

SCN-1 Scanner Converter Kit.....$49.95
CSCN Matching Case Set.....$14.95

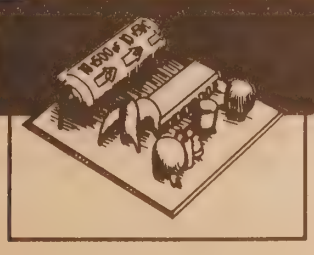
TICKLE-STIK
FOR THOSE NOSEY FRIENDS!

"Tickle or stimulator – take your pick...once you grab it, you'll let go quick!"

Mount this little kit, plus a secret switch – like a mercury tilt switch – in an ingenious can or box and watch the fun. Adding a bright ribbon is remarkably effective at baiting the unwary! The kit has a pulsing 80 volt tickle output and a mischievous blinking LED. And who can resist a blinking light!

Great fun for your desk – "Hey, I told you not to touch!" – workbench, or coffee table. Runs on 9 VDC.

TS-4 Kit.....$9.95



SUPER SNOOPER AMPLIFIER
WILL PICK UP A PIN DROP AT 15 FEET!

Here's a super-sensitive amplifier that will pick up a pin drop at 15 feet! An ideal general purpose amplifier, too. Two full watts audio output is great for boosting low-power receivers and radios, and, when wired for high gain, makes an excellent room monitor or big ear shotgun mike amp to listen in on "wildlife" both in the field and in the city! Runs on 6-12 VDC, drives any speaker.

BN-9 Amp Kit.....$8.95

UPS shipping is $4.00 for the first kit; $2.00 for each additional kit. Cases ship at no additional cost.

RV-1 REVERB EFFECTS/SURROUND SOUND KIT

NEW!

Here's an impressive audio effects kit that really has to be heard to be appreciated.

The RV-1 Reverb Effects/Surround Sound Kit converts stereo or mono audio signals into 3 dimensional sound. Instead of that "flat" sound coming from your TV, you'll feel like you're there! The spatial illusion is achieved by exploiting the phase relationship found in audio signals and combining a slight delay. The effect is astonishing!

The reverb effects portion is great for producing the well-known reverb sound we're all familiar with. But the real fun is adding reverb to your voice on the radio, telephone or PA system. You'll find lots of fantastic audio effects possible with the RV-1.

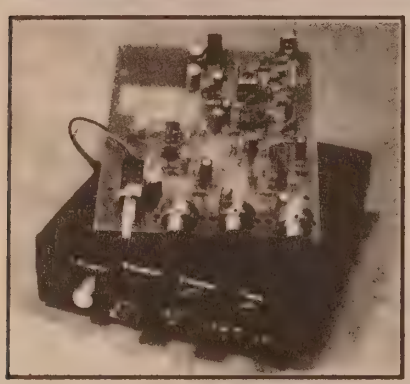
Delay is adjustable from 0 to 1/2 second and there are controls for volume, decay time and reverb duration.

The RV-1 easily connects to microphone or audio line level signals and there's even an on-board amp to drive a small speaker! Power is supplied by a standard 9 volt battery. Add our matching case set for a nice, finished look.

RV-1 Reverb Effects/Surround Sound Kit.....$59.95
CRV Matching Case Set.....$14.95

VHF MINI-MARINE AND WEATHER RADIO

FULL 130 TO 180 MHZ COVERAGE



The sea can be a dangerous place. It is unforgiving of error. From the coastline to the rivers, lakes and canals of our inland waterways, maritime communications provides a voice link between vessels engaged in business, pleasure and even ill-deeds on the open water. The 99 marine channels range from emergency (Channel 16) to navigation (Channel 13) and even ship-to-shore telephone calls (Channels 24 to 28 and 84 to 88). You'll even find official Coast Guard communications and continuous 24-hour-a-day NOAA weather broadcasts.

Bring this little beauty along on vacation this year for some extra fun. The matching case and knob set finishes off a project you'll love to show.

FR-146 Mini-Marine and Weather Radio Kit.....$34.95
CAR-1 Case and Knob Set for FR-146 Kit.....$14.95

ACTIVE ANTENNA

ELIMINATES OUTDOOR WIRING

Imagine a self-contained unit just 4 inches square that pulls in signals like a 60 foot long wire antenna – that's our AA-7 active antenna. The high-gain, low-noise unit lets you use the antenna on all bands – shortwave, VHF and UHF! Over 15 dB of gain pulls in the weak ones, whether you use the built-in telescopic whip or an outside antenna like the Skywire or Super Big Ear 46-49 MHz antenna. Features include a RF gain control, preamp bypass, 2 position HF and VHF-UHF selector, rear panel input and output connectors and more.

AA-7 Active Antenna Kit.....$28.95
CAA Case and Knob Set for AA-7.....$14.95

UPS shipping is $4.00 for the first kit; $2.00 for each additional kit. Cases ship at no additional cost.

STEREO FM TRANSMITTER
RUN YOUR OWN STEREO RADIO STATION!

Just connect a cassette deck, CD player or mixer panel to the FM-10A's line level inputs and you're on-the-air with a school, dorm, camp, home or neighborhood FM station. The FM-10A has plenty of power and our manual (24 pages) goes into great detail outlining all aspects of antennas, transmitting range and the FCC rules and regulations (10 pages alone on these topics!).

The FM-10A can broadcast anywhere on the FM broadcast band - it's completely adjustable between 88-108 MHz. It's exceptionally stable, too. Just set it and forget it. The specs are impressive – the FM-10A operates on 3-12 VDC, has convenient RCA Left and Right audio input jacks, adjustable stereo balance, over 30 dB stereo separation, excellent power output and provision for on-board whip or external antenna. Add our matching case and telescopic whip antenna set for a finished, professional look. Whether you set up a wireless extention of your home stereo, or a dorm radio station, you'll find lots of fun and satisfying uses for this great new kit.

FM-10A Stereo Transmitter Kit.....$34.95
CFM Case & Antenna Set.....$14.95

Foreign users – be sure to check out the LPA-1 Power Amplifier

"The school board would like to thank you..." V.C.H.S.

"Audio quality is FANTASTIC!" B.B.

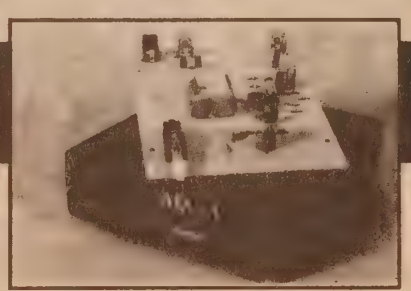
"...am ordering 3 more kits...love them!" B.M.

LPA-1 LINEAR POWER BOOSTER AMPLIFIER
POWER AMPLIFIER ADDS MUSCLE TO YOUR SIGNAL!

The LPA-1 is the ticket for boosting the power of any transmitter up to 1 watt. Although intended for use as a lab amplifier, many users in foreign countries use the LPA-1 to boost their Stereo FM Transmitter to a watt of power, capable of providing radio service throughout an entire town. Our clearly written instruction manual and top quality, plated PC board makles assembling this powerful amplifier quick, easy and fun. Power required is 12-15 volts DC at 250 mA, gain of 38 dB at 10 MHz, 10 db at 1000 MHz. For a neat, professionally finished look, add our matching case set.

LPA-1 Linear Power Amplifier Kit.....$39.95
CLPA Matching Case Set.....$14.95

AM TRANSMITTER



Run your own AM radio station, be the latest talk-show host or top-40 DJ. The AM-1 radio transmitter operates in the standard AM broadcast band and is easily tunable to any clear channel in your area. The AM-1 is designed very similar to actual commercial radio transmitters, so you'll learn how the "big boys" operate and use their transmitters. Transmitter power is 100 milliwatts so no FCC license is required. Expected range is up to 1/4 mile, depending on antenna and conditions. The AM-1 accepts standard line-level inputs from tape decks, CD players or mike mixers, and runs on 12 volts DC. Don't forget to add our custom matching case and knob set for a finished, professional look.

AM-1 AM Radio Transmitter Kit.....$29.95
CAM Matching Case Set.....$14.95

UPS shipping is $4.00 for the first kit; $2.00 for each additional kit. Cases ship at no additional cost.

AIRCRAFT RECEIVER
PUTS YOU IN THE PILOT'S SEAT!

Tune in to the exciting world of aviation. Hear the big airliners as they jockey for airspace at America's mega airports. Check out the doings on board big business' corporate jets. Listen in as private pilots navigate local airports, talk with the control tower -- and on occasion -- declare heart- stopping emergencies. There's even continuous local aviation weather broadcasts in most communities!

The AR-1 features smooth veractor tuning of the entire 118 to 136 MHz air band, effective AGC, superhetrodyne circuitry, squelch, convenient 9 volt operation and plenty of speaker volume. Our detailed instruction manual introduces you to two lifetime hobbies -- radio and aviation. The matching case and knob set finishes off a project you'll love to show.

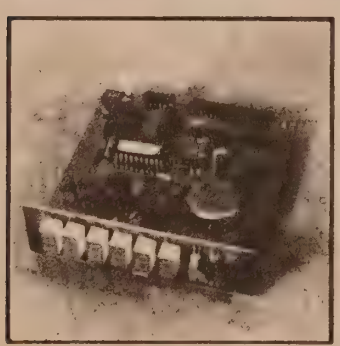
AR-1 Aircraft Receiver Kit.....$29.95
CAR-1 Case and Knob Set for AR-1.....$14.95
UPS Shipping Only. Kit or Kit and Case.....$4.00

Airwaves: The Aviation Monitor's Handbook

If you like flying, ever looked longingly up into the sky at a passing plane and wished you were there; If you like the pressure-cooker sounds of the air traffic control, juggling a dozen or so jam-packed jumbo-liners as they circle the local airport, you'll want to pick up a copy of *Airwaves*. *Airwaves* is the only book written by an aviation listener that's designed for people who like to keep an ear on the skies.Ninety 8 1/2 by 11 inch pages filled with everything you need to know to get the most of your time behind the dials of your AR-1 Aircraft Receiver. Includes a glossary of terms and jargon as well as a frequency allocation chart. We highly recommend *Airwaves: The Aviation Monitor's Handbook.*

Airwaves.....$17.95
UPS Shipping .....$4.00 Book Rate Shipping.....$2.00

UNIVERSAL REMOTE CONTROL
TURN IT UP, DOWN, ON OR OFF, USING A TOUCH TONE PHONE



NEW!

Turn virtually anything up, down, on or off by remote control using a touch tone phone.

Adjust thermostats, volume controls, channel switches, squelch controls, lights, set timers -- anything! And multi-level security with passwords allows you to give some of this control to others. The URC-1 has 16 switched outputs, 4 adjustable voltage outputs (controllable in 20 mV steps from 0 to 5 volts), two 10K ohm digital potentiometers, and 3 timers adjustable from 10 mS to 40 hours! A six-digit LED shows currently entered codes.

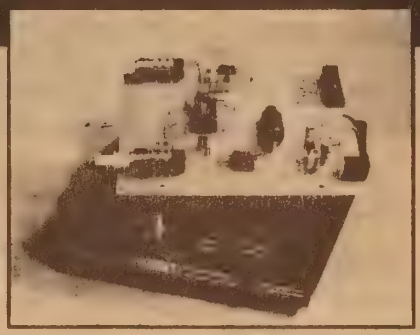
The URC-1 runs on 7 to 15 volts DC and is fully regulated and crystal controlled for the ultimate in stability.

Think how great it would be to be able to control the lights in your home from your touch tone phone -- or even by radio. Think how good you'll feel when you realize you build the URC-1 for hundreds less than similar devices!

A matching case set is available for that finished pro look.

URC-1 Universal Remote Control Kit.....$129.95
CURC Matching Case Set.....$14.95
UPS Shipping Only. Kit or Kit and Case.....$4.00

DR. NICAD. BATTERY CONDITIONER AND CHARGER
REJUVENATE AND ADD LIFE TO NICADS!



Quit spending big bucks for replacement battery packs. Recharge and recondition your batteries for peak capacity. Advanced circuitry actually discharges the battery before charging to eliminate memory effect. Even rejuvenates batteries that have been poorly cared for in the past.
"Quick charge" rapidly brings battery to full charge in less than 1 hour -- as little as 15 minutes for some types. And a "top off" charge mode squeezes every last bit of energy into each cell for the absolute most capacity. So quit wasting money -- not to mention what so many batteries are doing to the environment -- by buying batteries. Get a Dr. NiCad kit and start saving today! Charges NiCads or NiMH packs from 2 to 10 cells (easily expanded) and current capacities up to 10 Amp hours. Runs on 12 to 15 volts DC.

DN-1 Dr. NiCad Conditioner/Fast Charger Kit.....$49.95
CDN Matching Case Set.....$14.95

LIGHT BEAM COMMUNICATOR
TRANSMIT VOICE, MUSIC OR DATA ON A BEAM OF LIGHT!

Here's a project that will not only amaze your friends but is actually useful. Like something out of the 21st Century, the Light Beam Communicator uses modulated infra-red light instead of wires to transmit voice, music or data. Range is up to 1/4 mile using simple lenses (30 feet without lenses).

A complete system! Kit includes separate receiver and transmitter for unlimited possibilities.

The transmitter uses any type of mike and is very sensitive. The receiver employs an IR PIN diode detector and will drive any loudspeaker or earphone. Each section is separate so you can transmit at one end and receive at the other. Units run on 9-12 VDC. Add our matching case set for a finished, professional look.

LB-56 Kit.....$19.95
CLB Matching Case Set.....$14.95

TV DUPLICATOR
SEND TV SIGNALS THROUGHOUT THE HOUSE!

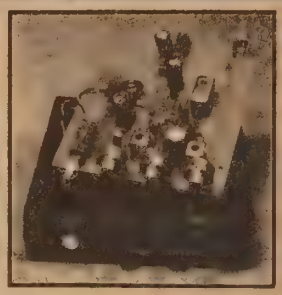
Ever want to watch your VCR in another room, but without stringing extra wires? You can even watch cable TV programs on other TVs in the house that aren't wired for cable.
This great little kit allows you to send any audio and video source (like a VCR or TV camera) to any TV set for up to 300 feet. The TV-6 Duplicator transmits on channels 2 through 6, runs on 12 VDC, and accepts standard audio and video signals.
The TV-6 Duplicator is actually a TV transmitter -- perfect for building a home or neighborhood TV station. Our matching custom case set gives a clean finished look to your transmitter. Comes with complete instructions and A-Z explanations of how a TV transmitter works.

TV-6 Kit.....$27.95
CTV Matching Case Set.....$14.95

UPS shipping is $4.00 for the first kit; $2.00 for each additional kit. Cases ship at no additional cost.

SHORTWAVE RADIO TUNES IN THE WORLD!

HEAR RADIO MOSCOW, BBC, AUSTRALIA, NORTH KOREA, MORE!



Imagine turning the dial and being able to tune in radio stations -- in English -- from London, Baghdad, Cuba, China and dozens more instead of the usual diet of re-hashed top-40. You'll hear news and information from around the world, as it happens, and not hours later -- if at all -- on the evening news. Plus there's music, inspiration, sports, world-wide talk radio, even game shows! It's no wonder that today's listeners call shortwave "world band radio."

This very sensitive (about a microvolt!) receiver is a true superhet design with automatic gain control (AC), RF gain control and plenty of speaker volume. Smooth veractor tuning allows you to check out any 2 MHz portion of the 4 to 11 MHz frequency range, and the kit conveniently runs on a 9 volt battery. Add our custom case and knob set to give your radio a finished, polished, look.

Amaze yourself -- and others -- see how you can listen to the world on a receiver you built in an evening.

SR-1 Shortwave Radio Kit.....$29.95
CSR Case and Knob Set.....$14.95
UPS Shipping Only. Kit or Kit and Case.....$4.00

PASSPORT TO WORLD BAND RADIO

THE "BIBLE" OF SHORTWAVE RADIO LISTENING

"...The TV Guide for world band radios."
-- New York Times

If you're interested in shortwave radio, Passport is *the* most complete and authoritative guide to world band radio. There are schedules and frequencies for stations in almost 160 countires ranging form Albania to Zaire. There's also an hour-by-hour guide to the programs you can hear, a no-holds-barred buyer's guide to equipment, plus articles designed to help you get the most out of your shortwave radio listening. Almost 400 pages jam-packed with the information you need.

BOK-2 Passport to World Band Radio (current edition).....$16.95
UPS Shipping .....$5.00 Book Rate Shipping.....$3.00

The Skywire Shortwave Antenna

A professional quality, 66 foot shortwave dipole antenna that really brings in those distant signals.

$49.95 plus $5 UPS

All you do is hang it up! Comes completely assembled and ready to use. Just $49.95.

SHORTWAVE CONVERTER

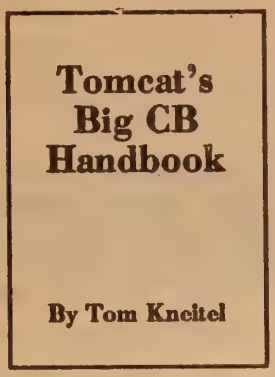
TURNS YOUR CAR - OR ANY AM RADIO - INTO A WORLD BAND RADIO

The SC-1 converter brings the sounds of the world right into your car radio or home stereo (when set to the AM broadcast band). Front panel push switches let you choose easily between regular AM radio and the shortwave bands. An additional switch allows the selection of any two bands of interest, each 1 MHz wide. Frequencies are tuned on your AM radio, making it easy to log stations or use your radio's presets. A built-in antenna switch automatically switches the existing AM antenna to either the radio or converter, making hook-up easy and fast. As with many of our kits, a handsome matching case and knob set is available to put the fishishing touches on your kit.

SC-1 Shortwave Converter Kit.....$27.95
CSC Matching Case and Knob Set.....$14.95
UPS Shipping Only. Kit or Kit and Case.....$4.00

CB Books

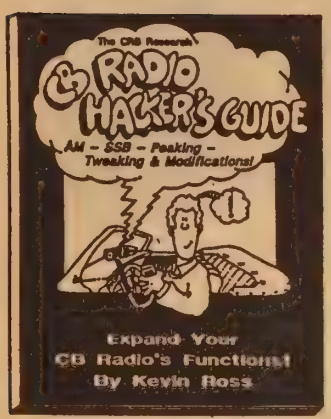
Order Toll Free
Let us pay for your call!
See order form for details!



Tomcat's Big CB Handbook

Tom Kneitel

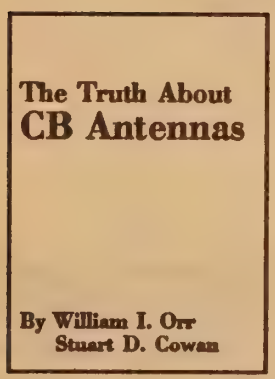
It's the largest CB handbook ever published! A giant, 221-page guide to 27 MHz communications that tells you everything you need to know about buying, installing and using AM, SSB and "freeband" for maximum efficiency and enjoyment (legal and otherwise). Complete CB jargon dictionary, national mobile-channel directory, FCC regs and enforcement methods, CB QSL info, working skip, AM/SSB operating procedures and taboos, making your own DX antenna, rig troubleshooting, anti-theft ideas, plus tons of photos, decals, designs and more! Tomcat's Big CB Handbook is an incredible bargain.
$13.95 plus $4.50 UPS or $3.00 book rate shipping.


The CB Resource
CB RADIO HACKER'S GUIDE
AM - SSB - Peaking - Tweaking & Modifications!
Expand Your CB Radio's Functions!
By Kevin Ross

CB Radio Hacker's Guide

Kevin Ross

Learn how to unlock those hidden functions the factory never activated, add new features the factory forgot to include. Tweak, peak and modify your CB so that it performs at its maximum potential to give the best power output, full modulation, and best AGC and squelch action. Add RF and microphone gain controls, a noise blanker, hi/low transmitter power. Learn how to diagnose CB problems, too! The CB Hacker's Guide covers more than 200 current and recent AM and SSB CB radios from Cobra, Couriers, G.E., Midland, Radio Shack/Realistic, SBE, Sears and Uniden/President. Whether you're an AM or SSB operator, you'll find this to be the most useful book in your radio room!
$.1995 plus $4.50 UPS or $2.50 book rate shipping.



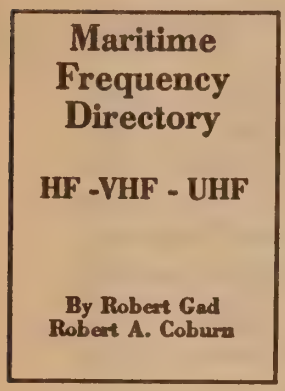
The Truth About CB Antennas

William Orr and Stuart Cowan

CB service centers and maintenance shops around the country report tha only about 10 percent of today's CB stations are truly effective. What causes this shocking situation? Crowded bands and illegal operations are part of the reason but much of the trouble lies with poor antennas. The simple truth is that your CB antenna is the key to effective communications -- your station is only as good as your antenna. The Truth About CB Antennas unmasks false antenna claims and shows what gain you obtain from 10 different antennas. Plus there's plans for building, installing and adjusting powerful antennas for strong signals, discussion of the advantages and disadvantages of vertical and horizontal antennas, interference filters, ground systems, coaxial cable and more. The Truth About CB Antennas is 224 pages.
$12.95 plus $4.00 UPS or $2.50 book rate shipping.

DX Radio Supply • *P.O. Box 360, Wagontown,PA 19376* • *(610) 273-7823*

Military Frequency Directories

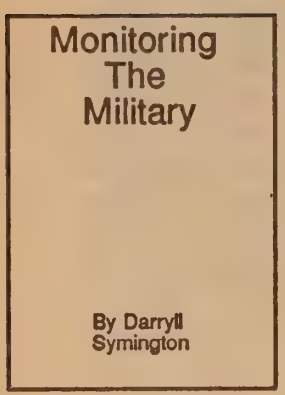


Maritime Frequency Directory

Robert Gad and Robert Coburn

A 400 page directory covering the entire range of frequencies used in the maritime service! Listen to high-class cruise liners as the arrive in port. Keep watch over freighters as they work the ports of the Inter-Coastal Waterway. Or just scan the "goings on" at the local marina. There are over 27,500 listings, arranged by state and town with additional information on who uses the frequency, their call sign, the channel number, coast frequency, ship frequency and comments. From the Long Beach Yacht Club in California to the Gaelic Barge Line in Detroit; from oilfield divers in Louisiana or a search-and-rescue operation in the Florida Keys, it's all here.

$24.95 plus 4.50 UPS or 3.00 postal service book rate.

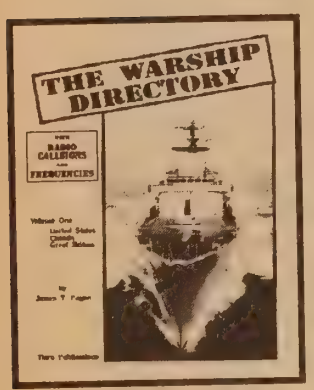


Monitoring the Military

Darryll Symington

New updated and expanded edition! Monitoring the Military is an astounding collection of frequencies for military installations in the continental U.S.. Arranged by facility, this guide gives you its location, the units stationed there and all the scannerband frequencies in use. There are over 10,000 frequencies listed, plus a tactical call sign index and the author's monitoring tips. This is a must for anyone who wants to follow the excitement that is the military.

$16.95 plus $4.50 UPS or $2.50 postal service book rate.



The Warship Directory

James T. Pogue

The Warship Directory is a guide to identifying the U.S. and Canadian warships you hear on your scanner. For example, if you hear a vessel identifying as NNUL, you'll be able to immediately know that you've tune in the USS Contellation, based in San Francisco. Includes Navy, Army, Military Sealift Command, Coast Guard, National Oceanic and Atmospheric Administration (NOAA) research vessels and their addresses.

$14.95 plus $4.00 UPS or $2.00 postal service book rate.

Specialty Scanning Books

Order Toll Free
Let us pay for your call!
See order form for details!

Compendium of American Railroad Radio Frequencies

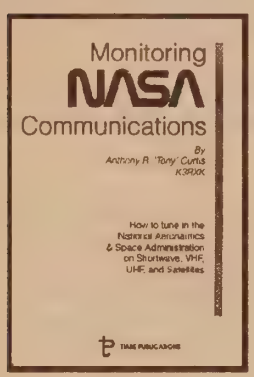
By Gary Sturn and Mark Landgraf

If you are a rail fan (and who isn't?) then this book is essential for chasing trains on a weekend outing or monitoring the rail frequencies. This book is listed alphabetically, by frequency, and by railroad name (with system-wide, and individual city and yard frequencies). System maps complement each listing.
$16.95 plus $4.50 UPS or $2.50 postal bookrate.

Weather Radio

By Anthony "Tony" Curtis

Your scanner can be your private source for up-to-the-minute local weather forecasts. Weather Radio has weather-everything frequencies, what to listen to, when and where, and an explanation of what it all means. This is truly a complete guide to tracking weather and storms via radio.
$16.95 plus $4.50 UPS or $2.50 postal bookrate.



Monitoring Nasa

The next time the shuttle is launched, your radio can give you a front-row seat on the action. This book shows everything you need to know to monitor NASA in space and on the ground, including equipment, scanner frequencies, rebroadcasts on shortwave, tracking and relay data satellites and the worlds largest list of NASA frequencies.
Just $14.95 plus $4.00 UPS or $2.50 postal bookrate shipping.

Outer Space Frequencey Directory

This book includes over 2,200 space and space-related frequencies from 1.8 MHz to 2,840 MHz! Communications, navigation, natural radio signals -- NASA retransmissions -- VHF/UHF transmissions, and an index to find frequencies fast.
Price $17.95 plus $4.00 UPS or $2.00 bookrate

We accept Discover, Master Card, Visa, checks and money orders.

DX Radio Supply

Box 360, Wagontown, PA 19376

610-273-7823

Serving Hobbyists and Professionals Since 1982

We Pay for Your Call! See details below.

ORDER FORM * ORDER FORM * ORDER FORM

PLEASE READ BEFORE ORDERING
FOLLOWING THESE SIMPLE STEPS WILL SPEED YOUR ORDER

MAIL ORDERS

1. Fill out the order blank and send a check, bank or postal money order, or your complete credit card information (see #3, below) to DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.

PHONE ORDERS

1. Order toll-free. Call 610-273-7823.

We do not have an "800" number but we pay for your call under the following terms. Here's the story. Many people are surprised to learn that it can actually be cheaper to phone in an order than to mail us an order. A stamp is 29 cents. A one-minute AT&T call between Los Angeles and Philadelphia, for example, is only 27 cents! The average order takes only about 45 seconds to place. So, when you phone in any order over $10.00 (not including shipping), we deduct thirty five cents from your bill, paying for your call! Don't be fooled by so-called "toll-free" 800 numbers. They are expensive for businesses to operate and the cost is ultimately worked into the price you pay for the merchandise. In the end, you pay for the call anyway. Maximum phone rebate per order is thirty-five cents.

2. To speed your order, fill out the form in advance and have your charge card in front of you. Call 610-273-7823.
3. When using a bank card, merchandise must ship to the address to which the card is billed. If you are unable to provide this information, please use a postal money order or certified check.

All credit cards are verified.

SAVE ON SHIPPING

1. All equipment ships UPS only. Books can ship either fast, fully-insured UPS (7-10 working days for delivery) or by less expensive US Postal Service Book Rate (up to 4 weeks). If you would like your Book Rate package insured, please add .75 per $50.00 of value. If you choose not to insure, please understand that the risk is yours and that we will not be responsible for items lost in the mail.
2. Ordering more than one item? Start with the shipping cost of the heaviest item and then add $2.00 for each additional item. The Scantenna and Scanner Beam cannot be combined with other items for shipping discounts. Antennas and equipment ship UPS only.
3. Sorry, no CODs.

IMPORTANT INFORMATION

1. Books, antennas and kits are not returnable. All sales are final.
2. Equipment may be returned within thirty (30) days of shipping but all returns are subject to a thirty five percent (35%) restocking fee. Items must be returned in mint condition and include all original packing material, manuals and accessories. Addtional fees will be charged on items returned scratched, damaged or otherwise unsaleable as new.
3. Items that arrive damaged in shipping should be reported immediately to UPS and then to us. We will file a claim on your behalf. The determination of responsibility is made by UPS and their decision is considered final.
4. This catalog supercedes all previous catalogs, flyers and advertisements.
5. Prices are subject to change. Not responsible for typographical errors. PA residents (only) add 6% sales tax.

Our 24-hour order line is 610-273-7823.

SHIPPING ADDRESS

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

DAYTIME PHONE NUMBER: (Area Code) _____

PAYMENT METHOD ☐ CHECK ☐ VISA ☐ MASTERCARD ☐ DISCOVER ☐ MONEY ORDER

SHIPPING METHOD ☐ UPS GROUND ☐ BOOK RATE ☐ BOOK RATE INSURED (See "shipping")

Product	Quantity	Price	Shipping	Total

CREDIT CARD ORDERS Exp. Date: _____

Card Number: _____

Issuing Bank: _____

Signature: _____

Total $_____

Optional Insurance for Book Rate Shipments $_____
See "Shipping" for details.

Shipping $ _____

PA Residents (only) 6% Sales Tax $_____

TOTAL ENCLOSED $_____

THE EDITOR'S DESK

Les Mattson, NESN Editor
Post Office Box 62-N, Gibbstown, NJ 08027
"NEWS YOU CAN USE"

THE READERS WRITE

Welcome to the 2nd issue of NATIONAL SCANNING with NESN. We've received a lot of nice letters from NatScan and NESN readers, here's a portion of one from NESN North Jersey Column Editor, Doug Rodgers, that pretty much sums things up.

Les:

Now that things have pretty much settled down, I would like you to know that I stand behind you 100%. It must have hurt you, to have friends of many years, turn on you like they did.

Although I do not know all the details of what has transpired over the past few months, I feel that most of it should have been private between you and those who felt that they had something so say about [what] you were deciding about the future of NESN. Why they felt that they had to "BASH" you all over AMERICA ONLINE is beyond me. It is my opinion that, since it was you that started NESN, and have been "Head Honcho In Charge" from the beginning, it's yours to do with as you see best.

As far as incorporating NESN with NATIONAL SCANNING, I like it.....

I can only imagine the hours that you have had to put in every month, to get the "News" out on time, and am grateful you had chosen to do so, as I am sure most of the readers are. But, as human nature goes, we tend to take things for granted, and sometimes forget to take out the time to give pats on the backs of those who do all the work.

I, for one, want to let you know that I appreciate all the work and time that you devote to the hobby and are willing to share, at great expense of your time and money, with others.

I fully understand your position and know you did what you had to do in order to preserve something you love deeply. I want to thank you for keeping NESN alive and let you know you still have many friends in the hobby. I look forward to working with you for many years to come.

Thanks for all the help you've given me and others in the hobby.

Doug Rodgers

NEW ENGLAND

This column will cover the States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont

CONNECTICUT - By Keith Victor, 44 Suffolk Dr., East Hartford, CT 06118

Welcome to the Connecticut column, with some drastic changes in listening in Connecticut. First of all, the Cities of Greenwich and Stamford have both switched over to 800 MHz trunking, therefore eliminating all of their conventional VHF frequencies. The Greenwich Fire Department's, however, will maintain 154.175 MHz (R) PL 100.0 for alerting the volunteers. This is Glenville's old repeater.

Stamford, on the other hand, will keep 154.130 MHz for the Call/Volunteer departments (The Big 5), with the city-career department, as well as the rest of the city on the 800 MHz trunked system. I just received word that the City of Meriden is the next to go to 800 MHz with the elimination of all VHF frequencies within the city. The Fire Department will keep 46.380 for alerting the stations and volunteers, and will also maintain the inter-city to communicate with the surrounding communities.

The Hartford Intercity frequency of 154.265 MHz PL 107.2, will become repeaterized due to the Bradley International Airport area-wide notification system. The simplex mode did not set off enough of the alert receivers, so the system will be repeaterized. The City of New Britain Fire Department has completed outfitting the remainder of their engine companies with VHF high band portables on 154.235 MHz PL 131.3, which is cross-banded with their 800 MHz trunked system and works rather well. The 800 MHz portables can talk to the VHF portables and vice-versa.

GREENWICH FREQUENCIES ELIMINATED	STAMFORD FREQUENCIES ELIMINATED
Fire = 46.500 & 158.940	Fire = 465.6125
Police = 39.820, 39.940, 153.995 & 154.085	Police = 39.020, 39.340, 460.475, 45.320, & 155.085.

Until next time, I hope that you all have a good holiday season.....

NORTHEAST SCANNING NEWS = BACK ISSUES AVAILABLE

We have many back issues of NORTHEAST SCANNING NEWS for sale. To receive a listing of the back issue dates and the Themes they cover, please send a #10 (business size) SASE (Self-Addressed Stamp Envelope) to NESN HQ, Post Office Box 62, Gibbstown, NJ 08027.

NEW ENGLAND

Continued from previous page

MAINE - By Brian Snow, 35 Clover Lane, Auburn, ME 04210

Welcome to the Maine column. Here's a few of my favorite frequencies for the Maine area:

33.700 = Old Statewide low-band fire. Still in use by many coastal and York County communities including Arundel, Kennebunk, Ogunquit, Wells and York.
122.800 = Unicom used by many of Maine's smaller airports including Auburn and Caribou.
147.090 = Portland area 2-Meter Amateur Repeater frequency used for AREA & RACES training.
159.340 = Numerous South/Central Hospital and Ambulances including Central Maine Medical Center, St. Mary's General Hospital, Franklin Memorial Hospital and United Ambulance.
154.265 = Androscoggin County Shared Fire Channel (includes Fire Towers).

That's it for this issue, have a nice, safe holiday!

MASSACHUSETTS - By Mariner S. Ayer, 299 Thompson St., Middleboro, MA 02346

Hello! First off, I would like to welcome everyone to NorthEast Scanning News and National Scanning. I have been writing the Massachusetts column for about four years now, and I have tried to make it a MEMBER'S column. If anyone who reads this column has any scanning information they would like to share with the other members, I would sure appreciate it, if you would send it in to me at the above address.

In the past issue of NESN, there have been questions about the antennas in the Callahan tunnel, which a few people have shed some light on. Gil Edwards says that he has Cellular One as his car phone company. Gil says he thinks he remembers that one of the C. O. newsletters saying something about "mini-cells" in the tunnels to avoid calls being "dropped."

Henry Brown Jr., who has been a great contributor of information, has once again sent in some valuable information for the readers. In the April issue of NESN, Myles Burke asked about the railroad that passes through the town of Holbrook. This is the Bay Colony Railroad. Here are their frequences, as reported in Scanner Master, and confirmed by me:

160.305R = Main Channel, repeater at R. R. Bridge on the Cape Cod Canal (Confirmed).
161.355 = Repeater input (Myles might want to try this one). **160.485 = Bay Colony Spare.**
161.265 = Maintenance of way. **160.800 = Local Conrail frequency.**

I've only heard 160.305, but people tell me it is powerful enough to be heard in Holbrook.

From Henry Brown, Jr. comes word that the Barnstable County fire radio system, including the town of Falmouth, is going to go to 800 MHz radios within 2 years. Apparently, this has been made possible by a state bond issue. I will do some more research here and try to talk to the

county radio tech. Henry also advises readers to try Boston's Metro Traffic Control on 450.1125. I can hear it down here in Middleboro, and it is interesting. Henry, once again I would like to thank you personally for being such a terrific supporter of this column and for sharing so much info with the Massachusett's readers. That's it for this issue, HAVE A MERRY CHRISTMAS!

NEW HAMPSHIRE - By Steve Donnell, 210 S. Main Street, Newmarket, NH 03857

This month, I'd like to give you a few tips on being prepared to monitor any emergency situation. This brings you some of the most exciting action you can hear, but can also help give you the absolute best "real time" information pertaining to a situation that may effect your own health and welfare.

Knowing exactly where to monitor is best stated by the saying, "know before the disaster strikes." Besides your areas Fire, EMS and Emergency Management frequencies, familiarize yourself with the frequencies used by your local industrial plants, utility companies, railroads and local airports. Also, get to know the frequencies used by such agencies as the Coast Guard, Civil Air Patrol and the Red Cross. Have a Happy Holiday, I'll see you next year!

RHODE ISLAND - By Maurice "Denis" Dandeneau, POB 7052, Warwick, RI 02887

Welcome to the Rhode Island section. As reported last month, the 800 MHz antenna works very well, I am now ordering and installing an 800 MHz amplifier to hear the new 800 meg. Massachusetts State Police trunking frequencies. I hear some traffic, but the amp will help a lot.

Anyway, news for this month is that the Town of Richmond will be going to a new frequency of 155.115. They are moving off 154.800 due to the interference since the Town of Hopkington put a repeater on the air and Richmond, only 3 miles away, can no longer talk with their vehicle radios. The West Warwick Emergency Management Agency has a new frequency for communications. The two frequencies are: 224.760 (R) Primary and 147.495 (S) Secondary on scene. Have a Happy New Year!

VERMONT - By Jim Lawrence, Post Office Box 167, Websterville, VT 05678

The Department of Fish and Wildlife game warden in the Montpelier area uses 159.405 as their statewide dispatch frequency. Interagency communication can take place on state channel 2, 460.500. Montpelier police use 460.050. Tune in these frequencies when a citizen reports sighting a moose on the edge of Vermont's capital city. The local ambulance crew is sometimes dispatched to the scene of a moose versus car accident. Listen for a "10-50I" (accident with injuries). I've heard Vermont State Police barracks in Derby, dispatching ambulances in the Derby-Newport area on 155.205. Got to run, have a great Holiday Season!

NEW JERSEY

This column will cover the State of New Jersey

CENTRAL - By Louis G. Shirley, 220 Route #18, East Brunswick, NJ 08816

Hello, and welcome to the CJ column. Last time around, we printed some info on MED and Fire communications. Now, I want to look a bit closer at some of that with Gerard Zappi Jr's. info.

Hunterdon County Fire frequencies are 33.740 fire-1, 33.680 fire-2, 33.040 fire-3, while Somerset County Fire is 33.940. Warren County Fire 46.140 (PL 100). The 33 and 46 MHz band have a lot of activity in the central and western parts of New Jersey.

Gerard also monitors NorthStar, the service known as Jersey Emergency Medical Shock, Air Rescue or JemStar. The State Police owns, pilots and maintains the chopper, while medics from University Hospital man it. Gerard usually finds them on Troop B trunking, but notes that the helicopters switch to the local medical or police frequency when landing at the emergency site. In Hunterdon County, they use 154.995 and have used fire frequencies in Warren County. I've monitored the use of fire freqs. myself, it shows just how easy it is to use the synthesized radios they have.

Once on its way to the scene, communications concerning the authorized landing zone (ALZ), can be very interesting. References to trees, buildings and power lines are priority items. Is there a ball field nearby, a shopping center parking lot? The site is usually chosen by the Landing Officer, not by the helicopter pilot. An area 110 ft.. by 110 ft. is needed to land the chopper. I've seen NorthStar land on the Garden State Parkway and I'm sure many of you have heard or seen it land near you.

A site a bit farther away from the accident may be chosen and a rescue vehicle may take the patient to NorthStar if there is no safe landing site nearby. Here is where monitoring Troop B and your local EMS, Fire and police frequencies, along with the Hospital freqs. proves very interesting. You can easily follow the communications by listening for the freqs. that the helicopter is told to tune to, usually Troop B trunking gives the in-flight frequency, but I've heard them also give the landing frequency. Paging for NorthStar is on 155.295 (PL 85.4)

Using Gerald's info, I just monitored a page for NorthStar on 155.295. They then popped up on Troop B trunking and were told "that's a go" concerning the page. Then, to use Hunderdon TAC-1 for the landing zone (LZ) info. The Liaison Office would be #2360 (possibly Stockton's Fire Chief, where "23" = Stockton and "60" = Chief, and the transmit freq. would be 158.955 and the receive freq. would be 154.965.

We will continue with "Action" band monitoring in the future. If you have anything to share, just send it to the above address, and I'll try to create a "theme" column based on the type of info I receive. Happy Holidays!

NEW JERSEY

Continued from previous page

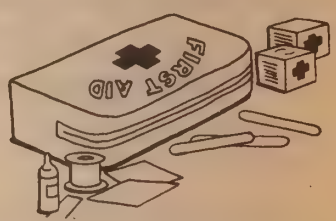
JERSEY SHORE - By William Hipkins, 1287 Woodlawn Avenue, Vineland, NJ 08360

Hello, again from the Jersey Shore. I'd like to follow up on the Hospital and EMS Theme from last issue. First, a typo to correct. The New Jersey SPEN-4 frequency is 153.785 and not 155.785! (Wendy did it again!) Here is some Atlantic County Hospital/EMS input.

ATLANTIC COUNTY

County EMS Information	Hospitals		Paramedics
155.175 - Dispatch	463.000	"MED-1"	468.000
155.340 - Ambulance-to-Hospital (HEAR)	463.025	"MED-2"	468.025
154.310 - EMS/Fire	463.050	"MED-3"	468.050
	463.075	"MED-4"	468.075
MICU - Medic 6 (AC Medical Ctr - City)	463.100	"MED-5"	468.100
MICU - Medic 7 (AC Medical Ctr - Mainland)	463.125	"MED-6"	468.125
MICU - Medic 8 (Shore Memorial)	463.150	"MED-7"	468.150
	463.175	"MED-8"	468.175

Shore Memorial
Hospital
Shore Road & New York Avenue
Somers Point, NJ 08244



Shore Memorial Hospital is a non-profit, 373-bed medical facility with high-tecnology, state-of-the-art acute care, with more than 35 medical and surgical specialties, with 258 doctors and 1500 employees. Shore Memorial is accredited by the Joint Commission of Accreditation of Health Care Organizations and is a member of the American and New Jersey Hospital Associations and Voluntary Hospitals of America.

OCEAN COUNTY- Bob Hinz reports that the Ocean Hilton Hotel in Long Branch uses 464.500 (PL 107.2) for their security operations. That's it for the Jersey Shore, hope everyone gets a lot of turkey, see you next year!

NESN HALL OF FAME

This issue marks the end of our long-running NESN Hall of Fame mentions. We've been very fortunate over the past 8-1/2 years to have made some very close friends, many of whom were the Regional Column Editors, a very loyal bunch of guys. This issue's Hall of Famer first became a NESN member on August 21, 1991. Shortly thereafter, he became co-editor of the South Jersey column. Our final candidate to the prestigious NESN Hall of Fame is Robert "Bob" Scull! Congratulations, Bob! L.M.

NEW JERSEY

This column will cover the State of New Jersey

NORTH JERSEY - By Doug Rodgers, 88 Clove Road, Wantage, NJ 07461

Hello from north Jersey. Well, here we are in the second issue of the Northeast Scanning News nestled in the pages of NATIONAL SCANNING. Thanks to Tom Rush for the following Meadowlands frequencies that he listens to at his location about 5 miles away: Race Track = 858.2625, Stadium = 859.2625 and the Arena = 860.2625

The Bergen Record newspaper recently ran an article about the radio antenna up on Garret Mountain in Paterson. Passaic County had spent $ 250,000 dollars to put the tower in place six years ago, to overcome transmission problems in various parts of the county. There are about 15 agencies that now use the190 foot tower, some of which include:

The Passaic County Sheriff's Dept., Prosecutor's Office, Paterson Fire Department and the county road department. The F. B. I. and Public Service Electric & Gas Company also use the tower. The U. S. Postal Service is considering using the tower as well. The article states that hand-held radios can pick-up signals into Sussex County and that mobile radios can transmit and receive all the way to Trenton. I know, myself, that the antenna is doing its job, as I have no trouble picking up the Passaic County Sheriff's Department on 45.220 from my home in Sussex County, 40 odd miles away.

QUESTION: Does anyone know what's going on with the West Milford Police radio system? I sometimes hear what sounds like repeater noise when the mikes are keyed up, but haven't noticed any change in reception from my home. I would appreciate any info that could be shared with our readers. Until next time, enjoy the holidays and I hope you get everything on your scanner wish list.

SOUTH JERSEY - By Bob Scull, 1976 N. East Avenue, Lot 278, Vineland, NJ 08360

This month, we have some TOP 40 frequencies from Jim Vecchiola, an NESN Charter Member and Hall of Famer.

1. 155.745 = Voorhees PD, Primary
2. 155.565 = Voorhees PD, Switchover
3. 154.430 = Camden Co. Fire Dispatch
4. 154.385 = Camden Co. Fireground
5. 154.160 = Camden Co. Fireground
6. 155.085 = Camden Co. Admin. & Fire Marshalls
7. 155 235 = Camden Co. EMS
8. 155.340 = Hospital-Ambulance Frequency
9. 153.770 = Camden CITY Fire
10. 155.520 = Cherry Hill Police Dispatch

21. 860.4375 = NJSP Troop A - South
22. 856.9375 = Ditto
23. 857.9375 = Ditto
24. 858.9375 = Ditto
25. 859.9375 = Ditto
26. 860.9375 = Ditto
27. 855.2125 = Ditto
28. 855.4625 = Ditto
29. 855.7125 = Ditto
30. 866.3125 = NJSP Statewide Link

NEW JERSEY

Continued from previous page

SOUTH JERSEY - By Bob Scull, 1976 N. East Avenue, Lot 278, Vineland, NJ 08360

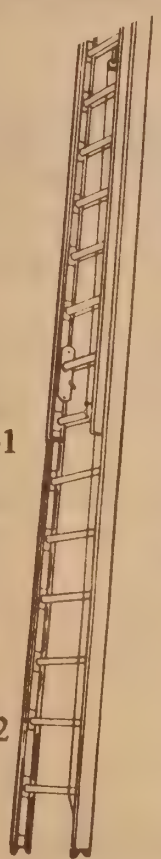
11. 155.3100 = Cherry Hill PD Switchover
12. 464.5750 = Echelon Mall Security & Operations
13. 500.8125 = Patco Hi-Speed Line Police Dept.
14. 500.8375 = Patco Hi-Speed Line Maintenance
15. 500.8875 = Patco Hi-Speed Line Administration
16. 500.9125 = Patco Hi-Speed Line = Trains
17. 856.4375 = NJSP Troop A - South
18. 857.4375 = Ditto
19. 858.4375 = Ditto
20. 859.4375 = Ditto

31. 867.3125 = NJSP Statewide Link
32. 154.2650 = So. Jersey Fire Mutual Aid
33. 460.3750 = DRPA Bridge Police - N
34. 460.4250 = DRPA Bridge Police - S
35. 154.6800 = NJSP SPEN-1
36. 155.4750 = NJSP SPEN-2 Nationwide
37. 154.7250 = NJSP SPEN-3
38. 153.7850 = NJSP SPEN-4
39. 156.8000 = Marine Calling & Distress
40. 157.1000 = USCG Marine Ch. 22

Thanks, Jim, for that great list of Top 40's!

I attempted to make my list of Top 40 Frequencies and ended up with nearly a hundred of them! So, I decided NOT to include the frequencies already in Jim's list and let editor LES edit the rest down to fit the space. (So, these are NOT in the order of my FAVORITE frequencies)

154.6650 = Delaware. State Police Disp. (F-1)
155.0700 = Atlantic Co. Sheriff Dispatch (F-2)
155.1300 = Atlantic City Police Dispatch (F-1)
460.4250 = Atlantic City Police Tac-2
460.2000 = Atlantic City Police Tac-4
155.2500 = Buena Boro Police Dispatch (F-1)
154.3550 = Atlantic County Fireground (F-2)
154.7850 = Cape May County Sher. Disp. F-1
154.1300 = Cape May County Fire Disp. F-1
155.8650 = Cumberland Co. Sheriff Dispatch F-1
154.0850 = Cumberland Co. OEM
857.4625 = Vineland (All Services)
859.4625 = Vineland (All Services)
155.5800 = Millville Police Dispatch F-1
154.4300 = Cumberland Co. Fire Dispatch F-1
154.2650 = South Jersey Intercounty Fire F-3
155.2800 = Cumberland Co. EMS On Scene F-2
033.7400 = Vineland Fire Dispatch F-1
155.1600 = Vineland EMS-1



156.1650 = New Castle Co. De. Police
155.6100 = At. Co. Corrections
460.1500 = Atlantic City Police Tac-1
460.3250 = Atlantic City Police Tac3
460.5250 = Atlantic City Police - Info
154.3100 = Atlantic Co. Fire Disp. (F-1)
155.1750 = Atlantic Co. EMS Disp. F-1
154.9650 = Wildwood Police Disp. F-1
154.1900 = Cape May Co. Firegrnd F-2
155.0850 = Cumberland Co. OEM F-3
856.4625 = Vineland (All Services)
858.4625 = Vineland (All Services)
860.4625 = Vineland (All Services)
155.5500 = Bridgeton Police Disp. F-1
154.3250 = Cumberland Co. Firegnd F-2
155.2200 = Cumberland Co. EMS Disp.
155.3400 = Cumberland Co. HEAR F-3
033.5200 = Vineland Fireground F-2

Looks like we're out of space for this issue, I want to thank all the South Jersey readers for their input and support. Hope you all have a Very Merry Christmas and a Prosperous New Year!

NO MATTER WHAT GOES WRONG, THERE'S ALWAYS SOMEONE WHO KNEW IT WOULD.

NEW YORK STATE

This column will cover the State of New York

EASTERN NEW YORK- By Joe Nooney, Post Office Box 30, Valatie, NY 12184

Here we are again for another NYS column. Let's get into the STAT Flight input. STAT Flight is a joint venture of Rocky Mountain Helicopters, Express Ambulance Service and Westchester County Medical Center. It is dispatched by the Westchester County Fire Control (60 Control). STAT Flight airlifts patients from Westchester and surrounding counties to WCMC, which operates an advanced trauma center, not available at most area hospitals.

In Rockland County, they have been heard on 46.180 (F-1), 151.475 Ramapo Police Department and 154.725 Rock City PD (HQ). The landing pad is usually set up at a shopping center parking lot or other suitable space near the scene of the emergency. They will, on occasion, land on the highway, near the scene of an MVA..

The local fire department provides guide lights to the emergency landing pad, being extremely careful to avoid overhead wires, which, if coming in contact with the copter, would worsen an already critical situation.

Co-editor, Howard Miller, lives in the vicinity of an abandoned supermarket, with a large parking lot, that is now occupied by the Spring Valley Police Department. The area has become a sort of an OK Corral in recent years, and he can often hear the STAT Flight flying over, enroute to picking someone up with a severe knife or bullet wound, or an unfortunate individual who hit his head repeatedly on a baseball bat.

In Rockland County, EMS/ALS services for the towns of Ramapo, Clarkstown and Orangetown, are provided by Rockland Paramedic Services, Inc. which is a joint venture of Good Samaritan Hospital in Suffern and Nyack Hospital in Nyack. Medic 23 & 25 are dispatched by the local police in Ramapo on 155.355. Medic 3 & 5 are dispatched by the Clarkstown or Orangetown PD on 155.160. In the towns of Haverstraw and Stony Point, EMS services are provided by Mobile Life Support Services, Inc. Medic 71 & 72 are dispatched on 155.175 by the respective township police departments.

In Ulster County, EMS services are dispatched by County Control on 155.220. Much of the Control/EMS to Hospital communications takes place on 155.280. I have monitored Kingston Hospital using 155.175 on occasion. ALS for the county is provided by Hudson Valley Ambulance with the exception of New Paltz (Mobile Life Support) and Saugerties (Diaz Ambulance).

NESN IS NOT DEAD!! IT'S

Downright Exciting And Delightful! (Lou Shirley)

PENNSYLVANIA

This column will cover the State of Pennsylvania

EASTERN - By Josh Heller, 855 N. Park Rd., Apt. AA304, Wyomissing, PA 19610

This column will cover the counties of Berks, Carbon, Lackawana, Lancaster, Lebanon, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne and Wyoming.

Welcome to the Eastern Pennsylvania column. I thought I would give you my top 40 frequencies this issue. I invite all my readers to submit THEIR favorite forty!

1. 154.3100 = Zone #4 Fire Disp.
2. 154.4000 = Zone #4 Fire (F-2)
3. 154.1600 = Zone #4 Fire (F-3)
4. 33.9400 = Berks Co. Fire Disp.
5. 33.6800 = Berks Co. Fire (F-2)
6. 154.3850 = Berks Co. Fire Police
7. 155.2950 = Berks Co. EMS Disp.
8. 155.1600 = Berks Co. EMS F-2
9. 155.2200 = Berks Co. BLSS-Hosp.
10. 155.3400 = Berks Co. ALSS-Hosp.
11. 462.9500 = Berks Co. Medical Command/Flight Operations
12. 462.9750 = Neighboring counties, Medical Command/Flight Ops.
13. 155.0700 = Berks Co. Police Disp.
14. 155.0100 = Berks Co. Police F-2
15. 155.2500 = Berks Co. Police F-3
16. 866.6125 =) 800 MHz
17. 866.9125 =) Trunked System
18. 867.2250 =) used in the City
19. 868.3250 =) of Reading, PA
20. 868.5875 =) for all Public Safety Purposes
21. 866.3000 = Phone Patch hole in the system
22. 154.6950 = PA. State Police Ch E Reading Bks.
23. 154.9050 = PA State Police Ch E Reading Bks.
24. 155.5050 = PA State Police Ch C
25. 155.8500 = PA State Police Ch. C
26. 155.4750 = Nationwide Police Emergency
27. 154.7550 = PA State Police Car/Car
28. 155.4600 = PA State Police TAC-1
29. 151.4900 = PA State Police TAC-2 Helicopter
30. 151.1900 = Wyomissing Boro Police Dispatch
31. 155.5650 = Muhlenberg Township Police
32. 155.9400 = Bern Township Police
33. 159.3150 = Spring Township Police
34. 154.9650 = Cumru Township Police
35. 464.6625 = Berkshire Mall Security

36. 119.9000 = Reading Reg. Airport Tower
37. 121.1500 = Reading Reg. Airport Dep/App
38. 121.9000 = Reading Reg. Airport Ground Control
39. 154.7250 = Berks Co. Police Car/Car
40. 158.8350 = Wyomissing Hills Borough Police (Also for PA EMA)

Oops, almost forgot to tell you! Don't forget that the City of Reading changes its control channel on the trunked system once at midnight EST / 1:AM EDT. So, you will have to lock that channel out each day and unlock yesterday's control channel, so you won't miss any of the action.

REGIONAL COLUMN EDITORS NEEDED - If you live in the States of Eastern New York, Florida or Virginia, and would like to write for NESN, please send me a typed letter telling me a little about yourself and your scanning experience. Les Mattson, Editor, NORTHEAST SCANNING NEWS, Post Office Box 62, Gibbstown, NJ 08027.

PENNSYLVANIA

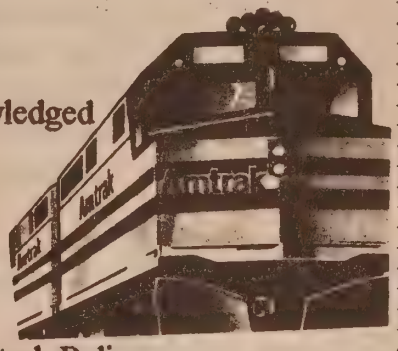
Continued from previous page

PHILADELPHIA - Louis Campagna, Post Office Box 52434, Philadelphia, PA 19115

I have a listing of Amtrak Police Codes from an anonymous source to share with you this issue.

AMTRAK POLICE CODES

10-00 = Emergency Broadcast - All Units Standby
10-01 = Receiving Poorly
10-02 = Receiving Well
10-03 = Priority Service
10-04 = Yes, Received, Acknowledged
10-05 = Repeat
10-06 = Busy
10-07 = Out Of Service
10-08 = In Service
10-10 = Vehicle/Person Check
10-11 = Request Additional Amtrak Police
10-12 = Request Supervisor
10-13 = Request Local Police Assistance
10-14 = Request Ambulance/Rescue Squad
10-15 = Request Fire Apparatus
10-16 = Prisoner In Custody
10-17 = Wants Or Warrants Check
10-18 = Request HQ
10-19 = Call HQ By Land Line
10-20 = Location



10-21 = Call _____
10-22 = Disregard
10-24 = Alarm Sounding (Location)
10-26 = Prepare To Copy
10-33 = Not According To Regulations
10-36 = Time Check
10-41 = Begin Tour Of Duty
10-45 = Accident
10-46 = Train Emergency
10-47 = Train Protection
10-48 = Vandalism/Stoning/Shooting
10-49 = Passenger Assistance
10-50 = Disorderly Crowd/Person
10-77 = Estimated Time Of Arrival
10-82 = Hostage Situation
10-88 = Bomb Threat
10-90 = Arrived At Scene
10-95 = Enroute To
10-99 = Assist Officer

CHESTER COUNTY HOSPITALS

Brandywine Hospital & Trauma Center (Caln Township):
155.2350 458.0750 155.2350 458.1250 453.0250 458.1750 458.0250

DELAWARE COUNTY HOSPITALS

Riddle Memorial Hospital (Lima, PA): 462.9500 467.9500
Sacred Heart Medical Center (Chester City): 501.9875
Taylor Hospital (Ridley Park): 457.5250 457.5500 457.6000 463.3875
463.4375 464.4250 464.8750 457.5750

That's it for this issue, we won't get together for another year, so have a great holiday!!

FOR THOSE WHO WANT PEACE AND QUIET? A PHONELESS CORD.

PENNSYLVANIA

Continued from previous page

WESTERN - By Al Lorence, 5030 Utah Avenue, Harrisburg, PA 17109-5570

(This column will cover all counties not covered by the Philadelphia column and the counties covered by the Eastern Pennsylvania column.)

County and local public work crews are now gearing up for what we hope will not be a repeat of last winter's insufferable winter. Here are some selected frequencies from Bob Apple's list:

37.26 = New Castle Streets Department
45.56 = Churchill Boro Public Works
151.100 = City of Erie Streets Department
154.980 = Fayette County Highway Maintenance
154.980 = Westmoreland County Highway Dept.
155.580 = Williamsport Highway Department
155.820 = Monroeville Public Works
155.880 = Pittsburgh Public Works
453.425 = Johnstown Highway Maintenance
453.925 = Allegheny County Highway Maintenance

SMOKEY BEAR

Our nation's most recognizable fire prevention symbol, Smokey Bear, celebrated his 50th birthday on the grounds of the state capitol in Harrisburg on August 11th. The furry fire fighter was joined by several of his mascot friends at the public birthday bash, include McGruff the crime-fighting dog, Sparky the dalmatian and even the Philly Phanatic.

A local oldies radio station, WWKL-FM, broadcast live from the event and provided party goers with free hotdogs and sodas. The guest of honor was escorted by a phalanx of uniformed Bureau of Forestry officers who coordinated the affair on the Department of Environmental Resources simplex frequency, 159.285 MHz. I have seen it listed on many frequency lists as statewide Channel 7.

The radio station broadcast its live feed to the station on 455.150 MHz and 450.250 MHz. The master of ceremonies' wireless mic came in loud and clear on 170.225 MHz, a common wireless frequency.

SCHOOL BUS FREQUENCIES

A bit belatedly, perhaps, we offer these Pittsburgh area school bus frequencies compiled by Bob Apple.

151.865 = Hempfield Area School District
154.515 = Pittsburgh and Plum Twsp. Schools

155.175 = Hart Bus Company
461.300 = Penn Hills School District

I'd like to take a few lines to wish all the NESN column editors and readers, a Very Merry Christmas and a Safe and Happy New Year!

WHAT DOES A MAN CONSIDER A SEVEN-COURSE MENU? A HOT DOG AND A SIX PACK

DELMARVA

This column will cover the States of Delaware, Maryland, Virginia, Virginia, West Virginia and the District of Columbia.

DELAWARE - By Jack McCartan, P. O. Box 9453, Newark, DE 19714

Hello, and welcome to another exciting issue of NESN.

First, we hear from our Maryland editor, Art Audley, who sent me some railroad frequencies. The Queen Anne's RR in Lewes, can be heard on 161.220 and 164.455. If you are headed down in that direction, punch in these frequencies and let me know what you hear. Also, Art states that the Wilmington & Western RR can be heard on 160.755. This is a new one. I have 160.530, 160.920 and 462.700 for the W&W RR. This needs to be verified, folks! How about some help on this?

Trooper 4, the State Police helicopter, transports many critically injured patients to Christiana Hospital. Monitor the chopper on 45.020, as well as the other frequencies in the Delaware State Police lineup. Christiana Hospital security can be heard using 464.050.

Rescue units can make for some great listening. They use 33.780, which is the statewide dispatch frequency for Fire and Rescue units. Also, punch in EMS Call 1 (462.950) and EMS Call 2 (462.975) and hear the ambulance crews on their way to and from emergencies. EMS MED 7 Base and EMS MED 7 mobile, can be heard on 463.150 and 468.150.

DELAWARE AREA HOSPITALS

The following is a listing of some area hospitals and their frequencies:

151.625	Kent General Hospital Security	464.050	Christiana Hospital Security
155.280	Wilmington Med. Center Transport		
155.340	Wilmington Med. Center Trauma Team		
164.9625	Veteran's Adm. Hospital (Elsmere) Paging		
167.825	Veteran's Adm. Hospital (Elsmere) Security		
155.400	St. Francis Hospital Security	462.800	St. Francis Hospital Paging

Any of you who have attended a Blue Rock's game can attest to the last frequency. The St. Francis Hospital paging frequency is very close to that of the security staff at the ball park. Since you can look over the centerfield fence and see the hospital in the distance, the interference is sometimes very annoying!

That wraps up another issue. I hope Santa brings all of you just what you deserve. On second thought, I hope he brings you plenty of scanners and accessories.! See you next year!

DELMARVA

Continued from previous page

MARYLAND - By Art Audley, Post Office Box 74, LaPlata, MD 20646

Greetings once again and welcome to the Maryland column for another issue. I'd like to list some of my favorite monitoring targets for you this issue.

Police frequencies:

155.535 = (WNDD762) = Charles County Sheriff's Department
155.610 = (WNDD762) = Charles County Sheriff's Department
155.640 = (WNDD762) = Charles County Sheriff's Department
39.060 = Maryland State Police, Barracks H, Waldorf
155.190 = Maryland State Police, Barracks to Barracks frequency
151.310 = Maryland Forestry South Police
151.145 = Maryland Department of Natural Resources
45.640 = Town of LaPlata police
46.540 = Towns of LaPlata police
453.975 = Harry Nice Bridge (Rte.. 301) Toll Facilities Police

Miscellaneous frequencies:

35.520 = South Maryland Oil (SMO)
154.490 = Besche Oil, Waldorf
158.145 = Southern Maryland Electric Cooperative (SMECO)
37.580 = Potomac Electric Power Company (PEPCO)
47.320 = Maryland State Highway Administration (SHA) Ch. #1
47.260 = Maryland SHA (Anne Arundel, Calvert, Charles & St. Mary's Counties)
151.805 = Physicians Memorial Hospital (PMH) LaPlata

From reader, David Kline, comes these Maryland fire department frequencies:

HARTFORD COUNTY	HOWARD COUNTY	KENT COUNTY
460.600 = Dispatch	154.250 = Dispatch	33.98
460.575 = Fireground	154.220 = Fireground	33.84
460.625 = Fireground	154.280 = Mutual Aid	33.04
	155.115 = Police	
Old Frequencies	153.770 = Portables	
33.60, 33.74, 33.76	154.295 = FAO to FAO	

I'd like to thank Daniel Curry for sending along a listing of Maryland airports with frequencies. Daniel's list arrived too late for June's Commercial Aviation Theme issue. If you'd like a copy of any lists I've mentioned, send me a LSSAE (Large Self Stamped Addressed Envelope.) I would like to wish you all a Happy Holiday season.

FAR SOUTH

This column will cover the States of Georgia and Florida

FLORIDA - By the NESN Staff, c/o NESN HQ, P. O. Box 62, Gibbstown, NJ 08027

Our special thanks this issue to Stephen Feldstein from Florida, for sending in the following input. In reference to the "Broward Goes High Tech" article in the July/August 1994 issue. The Broward frequencies that I have found, seem to be very active. They also seem to be shared by both police and fire departments in the Broward County area. I have heard calls from Hallandale to David to Ft. Lauderdale. And, here are the frequencies:

855.2375

856.4875	857.4875	858.4875	859.4875	860.4975
856.7375	857.7375	858.7375	859.7375	860.7375

GEORGIA - By Bob Langley, 471 Cottonpatch Road, Lawrenceville, GA 30245-7166

Thanks to Edward Ashley for the following input. There has been circulating for about a year or so, the rumor that all police, sheriff and EMS services are switching to the 800 MHz band. Well, some of that rumor has come to pass. The Augusta Police Department has been found using the following: 862.5625, 862.2625, 863.5625 and 863.2625. They are using a Motorola system of some sort. I discovered this when dispatch questioned one of the cars, asking if "....are you equipped with the Motorola system?" So, apparently, not all cars are using the 800 MHz system yet. They are also still using their old frequencies of 460.300 and 460.050.

I have also noticed that University Hospital EMS are also using the same frequencies along with Richmond County EMS. They also are still on their old frequences. The Augusta City Fire Department has made the changes to these new 800 MHz frequencies, but they no longer use the old ones. I have yet to find the Richmond County Sheriff using 800 MHz, but I noticed a Sheriff's car that had the 3" whip on the back fender. Any help on this one? Also, 173.4100 seems to be used for EMS calls on the Fort Gordon Army Base about 5 miles west of Augusta.

BURKE COUNTY EMS & FIRE SIGNALS

02 = Motor Vehicle Accident
02I = Motor Vehicle Accident with Injuries
10 = General Alarm
13 = False Alarm
16 = Rescue
17 = Aircraft Down (Crash)
32 = Firefighter Needs Help
37 = Bomb
45 = Death
55 = Send Ambulance
66 = Send Law Enforcement
100 = Bomb Threat

I hope you have enjoyed my first column and that you will send me some answers to my question.

CAROLINAS

This column will cover the States of North and South Carolina

SOUTH CAROLINA = By Theodore E. Baer, c/o NESN HQ, P. O. Box 62, Gibbstown, NJ 08027

Hello there, NESN readers, and welcome to the new NC & SC region. Theodore E. Baer, Esq. at the controls of the trusty word processor, hopefully bringing you items of information and perhaps, a bit of entertainment along the way. So much for the humble introduction..now, on to the column.

SOUTH CAROLINA HIGHWAY PATROL

The South Carolina State Highway Patrol has recently been reorganized and is now the dominant member of the newly created, Department of Public Safety. This move can only enhance the professionalism of the organization, and as we shall see, some of the immediate focus is in the area of telecommunications.

The SCHP currently utilizes a network of low-band, high-band and UHF frequencies. As we go to press, steps are in place to implement our 800-900 MHz trunked system, more on this in a moment.

In order to conserve space, and to keep my faithful editor and keeper of the computer happy, the operating frequencies for the SCHP will be listed in sentence form, as opposed to the more common columnar form.

There are eight low-powered fxs currently in use. They are 42.10, 42.26, 42.12, 42.14, 42.08, 42.34 and 42.06. 42.26 is used twice in the system, once as half of a duplex TX/RX configuration, and again as a simplex tactical FX. As it stands at the present, the seven patrol districts have the capability of operating on any of the above, but the following are currently in effect: Dist. #1 (Columbia) 42.34; Dist #2 (Greenwood) 42.08; Dist. #3 (Greenville) 42.14 and 42.10; Dist. #4 (Chester) 42.12 and 42.08; Dist. #5 (Florence) 42.08 and 42.10; Dist. #6 (Charleston) 42.10 and 42.26; and Dist. #7 (Orangeburg) 42.08.

Mobile extenders (PL tone 131.8) are in use in all districts.

Point-to-point communications are accomplished on 155.955 (PL tone 77.0) and regional communications between departments are conducted on 460.250 (PL tones of 118.8, 127.3 and 186.8 depending on the area.)

NEXT MONTH = 800 MHz update and continuation of the existing radio system.

MILLIONAIRE: A BILLIONAIRE BEFORE TAXES.

CENTRAL UNITED STATES

Alabama, Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Ohio, Oklahoma, Tennessee, Texas, Wisconsin

Send frequency and other information to:
Central U.S. Editor, National Scanning
Box 360, Wagontown, PA 19376

ILLINOIS – According to Gary Sturm and Mark Landgraf in their book *Compendium of America Railroad Radio Frequencies*, radio was first used in the railroad industry around 1910. That year a Union Pacific switch engine was equipped with a radio so the crew could get orders more quickly. Prior to that, dispatchers used written orders and crews communicated with each other by hand signals during the day and lanterns at night.

Things have advanced dramatically since that time and today the Association of American Railroads (designed to coordinate frequency assignments) uses a 97-channel radio system. Now, when a run-through train enters tracks owned by another company, the engineer simply dials the appropriate channel for that railroad.

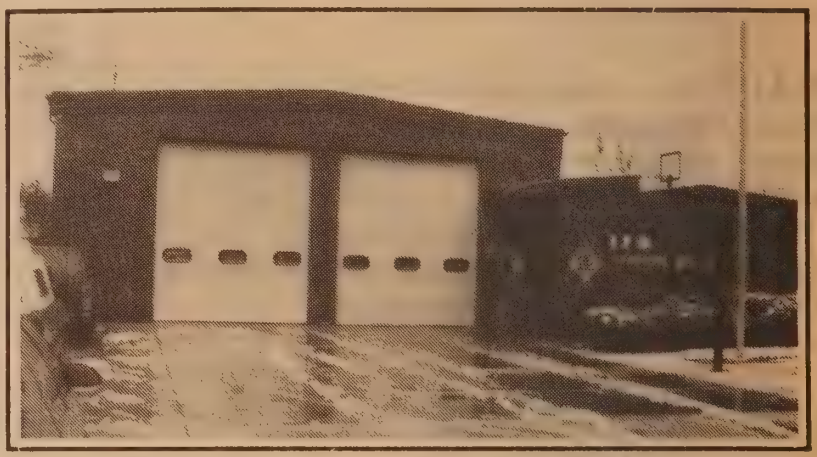
Chicago, being a hub of rail activity, serves an enormous number of trains. Clyde Anduhauser (IL 3 LWF) of Chicago, has been putting together a massive list of Chicago railroads and their official licencses. He shares it with fellow NatScan readers.

ROBERT McANALY

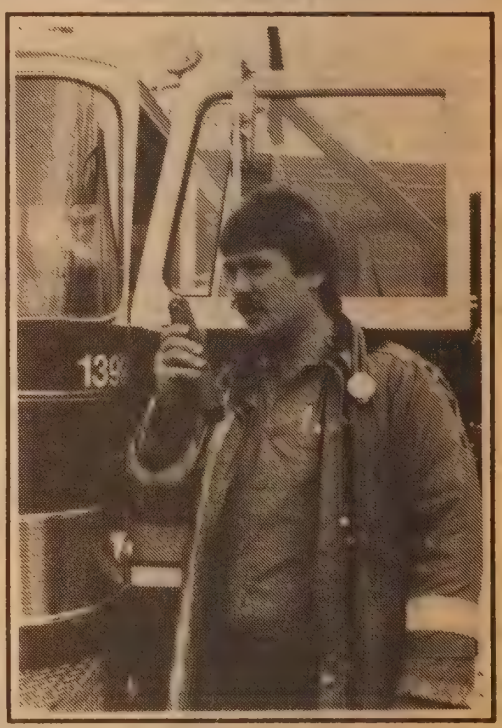
Atchison Topeka & Santa Fe – 160.245, 160.650, 160.785, 160.830, 160.995, 161.385
Belt Radio Communications – 160.380, 160.500, 160.965, 160.380, 160.500, 160.695, 161.445
Burlington Northern Railroad – 160.335, 160.605, 160.800, 161.100, 161.160, 452.900
Chicago Central & Pacific – 160.755
Chicago Rail Link – 161.610
Chicago Short Line Railroad – 160.335, 160.800
Chicago West Pullman – 160.215
Chicago & Northwestern Railroad – 160.230, 160.455, 160.485, 160.500, 160.575, 160.770, 160.815, 160.890, 160.920, 160.980, 161.040, 161.070, 161.175, 161.190, 161.520, 452.825, 906.000
CSX Transportation, Inc. – 160.230, 160.320, 161.160, 160.230, 160.275, 160.290, 160.320, 160.365, 160.740, 160.785, 160.875, 161.310, 161.370, 161.415
Elgin Joliet & Eastern Railroad – 160.260, 160.350, 160.725, 161.475, 161.550,
Grand Trunk Radio Company – 160.530, 160.590, 160.845, 160.905, 160.950
Grand Trunk Western Railroad – 160.530, 160.590, 160.845, 160.950, 160.845, 160.905
Illinois Central Railroad – 160.920, 161.190, 161.280, 161.460
Illinois Central Gulf Railroad – 160.515, 160.815, 160.920, 161.190, 161.205, 161.280, 161.295, 161.460, 161.505, 161.920,
Indiana Harbor Belt Railroad – 160.440, 160.545, 160.770, 160.980, 161.070, 161.400, 161.565
LaSalle & Bureau County Railroad – 160.635
Manufacturer's Junction – 161.475
Missouri Pacific Railroad – 160.410, 160.590, 160.665, 160.980, 161.145, 161.370
National Railroad Passengers – 160.230, 160.245, 160.305, 160.365, 160.650, 160.740, 160.800, 160.920, 161.100, 161.190, 161.265, 161.325, 161.370
Norfolk & Western Railroad – 161.250, 160.365, 160.440, 160.485, 160.620, 160.890, 161.115, 161.205, 161.250, 161.415, 161. 445
Northeast Illinois Railroad – 160.605, 161.340, 161.610, 160.410, 160.440, 160.605, 160.680, 160.770, 161.025, 161.205,

161.220, 161.250, 162.280, 161.340, 161.520, 161.610
Northeast Illinois Regional – 161.610
Penn Central Communications – 160.560, 160.800, 160.860, 161.055, 161.070
Regional Transportation – 161.025,
Soo System Radio Company – 160.395, 160.470, 160.500, 160.515, 160.620, 160.770, 161.085, 161.145, 161.235, 161.430, 161.520, 160.980, 161.085, 161.430, 161.520
SPCSL Corporation – 160.920, 161.280
Wisconsin Central Railroad – 161.295

INDIANA – Ed Teichner (IN 2 CES) sends us a couple of snapshots he took of Engine Company #22 in Indianapolis. "I'm a big fan of these guys so one day when I was in the area, I stopped in to say hello and take a few pictures. When I mentioned that I had read an article on the Indianapolis Fire Department in *National Scanning*, I was pleasantly surprised when one of the guys went to his locker and pulled out a copy of the magazine! "You'll note on one of the pictures that firefighter Todd Felgen is using one of the new 800 MHz radios. I didn't get to ask Todd but I have heard that not all the firefighters like the new system."



If firefighters don't like the system, they're not the only ones having a hard time. We're hearing from a lot of readers who are having trouble monitoring the system. Cleve Edwards (IN 2 RAS) says that there doesn't seem to be any sort of pattern to the trunking. "It's real, real, hard to follow," he says.



Above, Indy Engine Co., No. 22. Right, EMT, Todd Felgen.

"What's really bad about the system," says Susan Sallinger (IN 2 AAF) is that everybody and their brother is on it. Can any other NatScan readers lend us a hand? How do you scan a monster like this?" Susan sends us a print out of the 800 MHz "monster," better known as Metro Emergency Communications.

854.9875, 855.4875, 855.9875, 856.2125, 856.4375, 856.7625, 856.9375, 856.9875, 857.2125, 857.2625, 857.4375, 857.7625, 857.9375, 857.9875, 858.2125, 858.2625, 858.4375, 858.7625, 858.9375, 858.9875, 859.2125, 859.2375, 859.2625, 859.4375, 859.7625, 859.9375, 859.9875, 860.2125, 860.2625, 860.7625, 860.9375, 866.1000, 866.1250, 866.3500, 866.53750, 866.8375, 867.1125.

That's not the worst of it. It has been rumored that the Indiana State Police are moving to 800 MHz. In fact, even as we speak, the following frequencies are licensed in Indianapolis to the state of Indiana under police service: 855.2375. 856.9625, 857.9625, 858.9625, 860.9625, 866.0125, 866.5125, 867.0125, 867.5125 and 868.0125. Plug 'em in. Check 'em out. And let us know what you hear.

IOWA – Franklin County, Iowa, isn't a very big place. It's about 35 miles west of Waterloo and just 40 miles south of the Minnesota state line. "There's aren't any big towns, unless you count Hampton," says Steve Douglas (IA 2 ERF) of nearby Hansell. "Heck, there aren't but a handful of frequencies active here. Once I

was in Des Moines and I brought my scanner. I mean to tell you that there were dozens of frequencies and people talking and things happening. Here, if the scanner goes off at all, it's a big deal. Still, I do feel real good about scanning. Ever since I got my BC8500, I really feel as though I know what's going on. "Police protection is provided by the county sheriff," says Steve. Their frequencies are 154.725, 154.890 and 155.250. The rescue squad in Ackley is on 152.007. There's an airport in Ackley, too. I can hear it on 122.900. Hampton also has a city airport on 122.700. Other than that, there isn't much going on." Just out of curiosity, we looked up Franklin County, Iowa on the computer. Steve wasn't exaggerating. There are only 13 frequencies listed to the entire county!

Send Us Your Clippings, Your Frequencies and Your Photos!
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MICHIGAN -- Peter Butler (MI 1 ACE) of Battle Creek sees the following State of Michigan frequencies listed in "Police Call" and wonders what they are used for. Can anyone help? 154.665 -- Red •154.920 -- Green • 155.460 -- White • 155.505 -- Blue.

MISSISSIPPI -- Tiffini LaVelvera (MS 2 BUN) lives in Raymond, Mississippi and she gets "a lot of joy and not a few good chuckles" listening to her scanner. "One of my favorite things is hearing the people at Hinds County Junior College. Lordy, there's some carryin' on at that place. I only wish I had had the opportunity to go to college. Not for the education but for all the fun those kids are havin'. If only their mamma's knew!" Tiffini didn't include the frequencies but we looked them up in case you happen to be in the area. They're 155.595 and 460.275. We also noticed some numbers for Jackson, Mississippi. If you live there, punch in 152.007, 155.340 and 155.355 MHz. They're listed for the University of Mississippi at Jackson. And welcome aboard, Tiffini. We don't hear from our MS readers often enough!

MISSOURI -- Hubert Harris (MO O AGF) of Macon reports that a scanner listener helped lead police to a man suspected of robbing a 7-Eleven store in St. Louis. A clerk at the store was severely beaten during the attack, requiring 60 stitches in his head and chin. The robbery occured at 1 AM and police were without a suspect. Later that day, however, an unidentified citizen who was listening to his scanner taped a cordless phone conversation where the robbery was being described. The scanner listener turned the tape over to police who were able to identify the suspect from details on the tape. You may have seen the video of this crime on TV. A surveillance camera at the store recorded the robber fleeing the store, then running back inside after realizing he left behind his booty. The video was picked up by TV stations all over the country. By the way, a spokesman for Southland Corp., owner of the 7-eleven store, reprimanded the clerk for resisting the robber.

"That individual broke company policy," snooted Margaret Chabris. "We have a policy of non-confrontation," she said. "If someone resists a robber, it could escalate the potential for violence."

"Some people don't resist and are killed anyway," replied St. Louis police major Gregory Hawkins. St. Louis police said that Bill Krause [the clerk] should be commended.

Terry Spattre (MO 3 CEF) of St. Louis sends in a listing of ambulance and rescue squads for St. Louis County, Missouri.

Affiliated Medical Transport – 462.950, 462.975
Central County Emergency ALA – 462.950, 462.975
Gateway Ambulance Service – 47.500, 155.220, 155.235, 155.340
North Central County Fire Ambulance – 462.950, 462.975
St. Louis (City) – 462.950, 462.975
St. Louis County – 155.220, 155.235, 155.340, 155.400, 462.950, 462.975

St. Louis University – 155.220 and 155.340

"You know what I haven't been able to figure out yet?" asks Terry. "All the frequency books list a 'State of Missouri' ambulance and rescue squad on 453.075 MHz. The transmitter location, and best as I can tell, is the city of St. Louis. Does anyone have any information on this?"

MO MARINE – We got an absolutely fantastic frequency list from Hugh Tallerman (MO 1 ESY) of Clayton. The frequencies are part of the commercial marine radio service and a full range of river services, including some of the bulk carriers on the Mississippi. "Since many companies share a common frequency, I'll do the list that way even though I know that you prefer to list things by name," says Hugh.

156.350 – Wisconsin Barge Line, Cunklin Harbor Service, CLC of America Inc.
156.425 – Carl R. Crackle
156.450 – American Commercial, Riverway Co., Spartan Transportation
156.500 – Gemini Inc., John Fabrick Tractor, Large Stegmann Fertilizer, SCNO Barge Lines Inc.
156.550 – Federal Barge Lines, Inland Waterways
156.600 – Federal Barge Lines
156.675 – Apex R E & T, Valley Line Inc.
156.900 – American Commercial, Valley Line Co., Kitch Marine, Nilo Barge Line,
156.950 – APEX R E & T, CLC of America Inc., Huffman Towing Co., Jefferson Barracks Marina
156.975 – Jefferson Barracks Marina
157.025 – American Commercial

OHIO – Columbus appears to have plenty of action for the aviation monitor, as evidenced by the frequencies sent in by Leopold Starnovsky (OH 1 DEG) of Worthington.

Bolton Field (2I4) – Tower 119.0 – Ground 121.8
Ohio State University (OSU) – Tower 118.8/258.3 – Ground 121.7 – ATIS 121.35
Port Columbus International (CMH) – Tower 132.7/257.8 – Ground 121.9/348.6 – Clearance Delivery – 126.3
Final Approach 118.2 – ATIS 124.6
Rickenbacker International (LCK) – Tower 120.05/348.4 – Ground 121.85/275.8 – ATIS 132.1/273.5

Rickenbacker is also the base for the 160th Air Refueling Group, an Air National Guard unit. Some common frequencies for refueling operations are: 252.1 – Base command Post • 286.2, 311.3 – Air refueling operations. Air Traffic Control services are provided by the FAA at Port Columbus. The Columbus ARSA (Airport Radar Service Area) covers Delaware, Fairfield, Fayette, Franklin, Knox, Licking, Pickaway, Ross, and Union counties, with North and South control areas separated by a line drawn through Port Columbus International Airport. The following frequencies are used for both approach and departure:

Port Columbus - 125.95/388.8 • North – 132.3/279.6 • South "Satellite" Airports – 120.2/267.9 • North – 119.15/392.1
South Flight Service Station services (weather briefings, flight plan filing and so on) are done through the Dayton FSS on 122.2 and 122.3.
Airlines – 129.3 • American – 131.5 • America West – 131.025 • Comair –130.525 • Continental – 131.85
Delta –129.2 • Midwest Express –131.25 • Northwest– 130.7 • Southwest –130.325 • TWA – 131.075
United – 130.1 • USAir –128.85 • PDQ Air Service – 122.95 • Lane Aviation – 123.5 • Central Skyport – 132.0

In Columbus, some frequencies from the file of "Neat Stuff to Listen To" are the VHF-FM frequencies used by helicopters of the 354th Medical Battalion at Port Columbus: 30.50, 36.50, 38.10, 41.00 and 139.000. You should also be aware that the State of Ohio is planning a new statewide 800 MHz trunked radio system. To be known as MARCS (Multi-Agency Radio Communications System), the system will be used by Public Safety (the Highway Patrol and the State Fire Marshal), Corrections, Natural Resources, Transportation and

Administrative Services. The system still be installed in three phases; Central, East and West: The Central system is expected to be on line in 2-3 years.

For OHP, the dispatch plan is being completely reworked. Instead of a dispatcher at each Patrol post, the state will be divided into three sectors: East, Central and West, with one dispatch center for each sector. The new Columbus JDF/EOC (Joint Dispatch Facility/Emergency Operations Center) is now complete and is handling all OSP communications for the Columbus area. ODNR will continue to be dispatched by one dispatcher statewide as is done presently, with dispatching handled out of the Columbus JDF/EOC.

OKLAHOMA -- "Chickasha, Oklahoma, is home to about 16,000 souls," writes Al Henry. "But we raise as much hell as 36,000 people. You'll see. All you gotta do is stop by for a visit," says Al. "Last summer I mounted two speakers flush with the ceiling of the front porch. Then I wired them to my scanner. So the next time you come visit, we'll grab a cup of coffee, sit out on the porch and let the scanner's blast. Stop by on a Friday night and you'll see what I mean by 'action.'" Here's Al's "Master Frequency List."

Agricultural Dept. (U.S.) – 164.150 • Civil Defense – 155.235 • City of Chickasha – 155.760, 155.820, 155.985
Chickasha Police – 154.815, 155.010, 155.130, 155.490, 155.625, 155.670, 156.150, 159.150.
County Sheriff – 154.770, 154.815, 155.010, 155.130, 155.490, 155.670, 154.815, 155.130, 155.490 and 155.670.
Highway Patrol – 854.737 • Turnpike Authority – 159.00, 159.120

"If any fellow National Scanning readers happen to be in the area, tell them I'd be happy to show them around Chickasha," adds Al. "I don't see so well any more -- haven't since I got out of jail last December -- but I've lived here so long I can find my way around in the dark."

"I've heard some interesting communications on 44.840 MHz," says Tim Ranchero (OK 4 RET) of Bartlesville. "The voices are male and it seems like some sort of law enforcement or animal control agency. Any idea what it might be?" You're best bet for an accurate identification will be another Bartlesville scanner listener. Failing another reader who can help you, I looked it up in our massive frequency database and came up with what sounds like a ringer. 44.840 is licensed to the WNLA 813, Oklahoma Wildlife Conservation. This is apparently a state agency.

TENNESSEE -- Col. Bruce Armright is employed by his uncle -- Uncle Sam. "I'd like to say only that I work for the United States government and that my job involves communications." Communications, specifically scanning, is also Col. Armright's hobby.

"There probably aren't too many places that are as hot for government monitoring as Nashville," he says. "We've got everything from the US Air Force to the Federal Protective Service. Most people think of Nashville as 'Music City USA.' I'm here to tell you that it's scanning heaven." Col. Armright's submits his frequency list. "I've traveled around the State a bit and I can tell you that some of these frequencies are good all over the country, not just in Nashville."

Air Force (U.S.) – 165.112 • Army (U.S.) – 148.725, 148.925, 149.865, 150.465, 150.725, 412.950, 413.500
Army Corps of Engineers – 156.300, 156.600, 156.650, 156.700, 156.800, 157.100, 157.125, 163.437, 164.962
Civil Air Patrol – 143.750, 148.150, 149.925 • Coast Guard – 156.300, 156.700, 156.800, 157.050, 157.100
DEA – 165.235, 165.290, 418.200, 418.625, 418.675, 418.750, 418.800, 418.825, 418.900, 418.950, 418.975, 419.000
Federal Aviation Administration – 162.275, 165.762, 169.375, 408.825 • Federal Protective Service 415.200, 419.175
Justice Department (U.S.) – 158.850, 158.910, 158.970, 159.150 • Navy (U.S.) – 148.375, 148.975
Nashville Air National Guard (Berry Field) – 138.100, 149.495, 163.462, 163.487, 163.512, 163.512, 164.100, 165.012
Postal Service (U.S.) – 162.225, 169.850 (Inspector), 171.262 • U.S. Marshal's Office – 162.787, 163.200, 164.600
Tennessee Valley Authority – 40.620, 40.740, 170.050, 170.075, 406.550, 412.025, 416.475, 417.625
Veteran Administration – 155.280, 155.340, 163.375, 168.000, 460.662, 460.687, 460.737, 460.787, 460.837, 460.862

TEXAS -- Dallas/Ft. Worth International Airport has moved all their safety operations to a new 800 MHz trunked radio system. This includes not only police, fire and crash trucks but also routine maintenance. The frequencies, which come from a DFW International Airport employee and fellow *National Scanning* reader, are as follows: 866.0125, 866.0875, 866.4625, 866.5125, 866.5875, 866.9875, 867.0125, 867.4625, 867.5125, 867.5875, 868.0125, 868.0875, 868.4625, 868.7125 and 868.9375.

Western United States

Washington, Oregon, California, Nevada, Arizonia, Utah, Idaho, Montana, Wyoming, Colorado
New Mexico, North Dakota, South Dakota, Hawaii, Alaska

Readers may send frequency and news information to
Laura Quarantiello, Western U.S. Editor
National Scanning, Box 360, Wagontown, PA 19376

SFPD 800 MHZ

San Francisco is phasing in a new 800 MHz system which will consist of expanding the current trunked system to accommodate more users. Existing trunked radio users are the Department of Power and Water, Unified School District, Animal Care, Port Authority, FD (AWSS), City College, and Department of Public Health Centers.

Departments scheduled for conversations are DPT, WD, Sheriff, OES and Parks and Recreation in the fall. Starting next spring, a second trunking system will be built for Police, Fire and Emergency Medical. This system will provide additional radio coverage inside buildings in the downtown and financial districts. All city 800 MHz radio will be authorized to use Mutual Aid channels, which operate in conventional mode. San Francisco is in the process of working out a Bay Areawide Mutual Aid system. The Paramedics Division is also in the process of obtaining and bringing on-line an Automatic Vehicle Locating System (AVLS) for the city's ambulances. Current timelines show delivery of the equipment should be complete by the time this issue hits your doorstep. Phase One installation began in September and will be completed by the end of January 1995, with implementation scheduled for December of 1995. Phase Two installation begins April of 1996 and should be complete by March of 1997, with implementation by September of 1997. Dates are subject to change!

SFPD VERBAL SHORTHAND

We've all heard of ten and eleven codes and most of us are familiar with them. What really stumps a listen, however, is the verbal shorthand used commonly by police officers to save time on the air. Dick Dillman of San Francisco dropped these abbreviations into the ether of the Internet recently. If you're listening to San Francisco Police, these may help you out.

IFO	In Front Of
PAS	Premises Appears Secure
PASE	Premises Appears Secure from the Exterior
GOA	Gone On Arrival
T&O	Transfers and Orders
PCO	Parking Control Officer

SCANNER BOB

He's not a cop, but in 1993 he helped the San Francisco Police Department recover over three hundred stolen vehicles. He doesn't carry a gun, yet in fifty cases the thieves were still in the car when he spotted it and called police in to make arrests. He's a 41-year-old computer engineer named Bob and for one hour each day he drives the streets of San Francisco with his cellular phone and his scanner, looking for stolen vehicles. When he was active, the radios would crackle with 'Units, we have a citizen on a cell phone following a 10-30 (stolen) vehicle.' The dispatcher would then continue to give out crossstreets and directions until patrol units could converge on the scene and make an arrest. It wasn't long before the calls went out 'Units, we have a citizen, Bob, on a cellular phone...' Bob quickly gained reputation as a good source, and whenever a Bob call went out, units moved quickly in his direction.

With a scanner and common sense - he doesn't confront or pursue - Scanner Bob makes a difference by getting involved and getting results. Thanks to Paul Barwick for the story.

GROOM LAKE MYSTERY

80 miles north-northwest of Las Vegas lies the classified US Air Force base known as Groom Lake. The government denies that it exists and will say nothing about it publicly. However, scanner buffs, UFOlogists, military fans and even TV news crews know where the base is and they've made the ridgelines overlooking the complex into tourist areas. The Air Force, in an effort to end the spying, has been attempting

to acquire four thousand additional acres of land, including the overlooking ridges. What is the military hiding out in the Nevada desert? If you're in the area, stop and check it out.

381.300 Nellis AFB Command Post "RAYMOND 22"	255.800 Nellis Dreamland Base
118.700 Nellis Dreamland Approach	126.150 Nellis Dreamland Approach
255.800 Nellis Dreamland Approach	261.100 Nellis Dreamland Approach

BE A DISPATCHER

Have you ever wondered how police dispatchers keep track of everything that's happening? Have you ever listened and tried to keep notes of the disposition of all units? It's a tough job. One of our readers in Sioux Falls, South Dakota has discovered a shareware program that makes being an armchair dispatcher a great deal of fun. Mark Noble says that RAD Software (P.O. Box 1991, Columbus, GA 31902) offers a program called 911HELP. Intended for departments with 100 officers or less, the program runs on PC's with DOS, Windows or OS/2, and allows full tracking of units. The displays are color-coded for "at a glance" knowledge of where units are and what their disposition is currently. Mark says the complete program sells for $99, but v2.0 is available in shareware for testing. Mark downloaded his copy from the CompuServe Crime Forum.

Mark also adds that he uses a PRO-2006 and BC2500XLT to monitor public safety in his area. He's been listening for several years now and very much enjoys both the hobby and NatScan.

DENVER MIL AIR

For those of you who monitor the military air activity taking place in the state of Colorado, here are some numbers for Denver area that just might make your listening a little easier and more productive. The 225-400 MHz band is a wide area to search, so hit and miss is the name of the game, unless you have a guide. Try our guide on for size and let us know what you hear. Thanks to the anonymous contributor in DEN for this one.

227.300	Buckley-Helicopters Ops	230.800	Buckley-Helicopters Ops
232.700	MOA/Restricted-"Dutchman"	237.200	MOA/Restricted-"Dutchman"
253.625	MOA/Restricted-Ft Carson	260.200	Air Refueling Route AR643-Secondary
268.100	Buckley ANG-Tactical Special Use	269.000	Cheyenne Airport-ANG Ops
271.900	MOA/Restricted-"Beaver Dam"	271.900	Radar Bomb Scoring Site-Cheyenne
275.800	Buckley ANG Ground	281.200	MOA/Restricted-"Blood Alley"
282.600	Buckley ANG-Tactical Special Use	286.400	MOA/Restricted-Ft Carson
286.400	Buckley ANG-Tactical Special Use	287.300	Buckley ANG-Range Control-"Airburst"
287.400	Buckley ANG-Tactical Special Use	289.600	Buckley ANG Tower
290.600	MOA/Restricted-Ft Carson	292.100	MOA/Restricted-"Blood Alley"
296.700	Buckley ANG-Tactical Special Use	301.500	MOA/Restricted-"Blood Alley"
303.000	A/A Intercom	314.200	MOA/Restricted-"Spirit"
319.300	Buckley ANG-Tactical Special Use	320.900	Air Refueling Route AR622-Secondary
325.800	MOA/Restricted-Ft Carson	344.200	MOA/Restricted-"Blood Alley"
344.600	Buckley ANG METRO	352.900	Air Refueling Route AR622-Primary
354.200	MOA/Restricted-"Spirit"	359.100	Buckley ANG-Tactical Special Use
361.400	MOA/Restricted-"Blood Alley"	361.400	MOA/Restricted-"Cornfed"
363.400	MOA/Restricted-"Blood Alley"	370.400	Air Refueling Route AR643-Primary
372.200	Buckley ANG	381.400	Buckley ANG-Tactical Special Use
395.100	MOA/Restricted-"Cornfed"		

PHOENIX PD

David Franklin wrote to say that he's set up with a PRO-2006 and a discone antenna right in the heart of Phoenix, Arizona. After much frequency book skimming and outright band scanning, he finally tracked down all of PPD's Chase channels. Being the nice guy that he is, David immediately wrote to share these with us. "These frequencies will become active when there is an emergency such as a high-risk vehicle stop or a pursuit." Chase One is 154.890, Chase Two 154.755, Chase Three 155.790 and Chase Four 155.760. David goes on to say that PPD's UHF system includes links of the Chase channels on 453.100 and 453.450. There may be other links, but David is still working on those.

CALIFORNIA PRIVATE SECURITY

Inspired by our recent column item on Rent-A-Cops, Steven Sheckter in La Jolla, California sent along this list. According to Steven, though these frequencies have been heard in and around the San Diego area,

many are good throughout the west. He advises listeners to search around the listed numbers for other frequencies in use.

43.9600 Purolator Armored Car Svc
151.6550 California Plant Protection
151.7150 Baker Protective Service
151.9250 E Investigations
153.2300 Gulf General Atomic F2 - Security
154.5150 Pro-Tect Professional
154.5700 Hilton Inn F1 - Security
154.6000 Hilton Inn F2 - Security
452.4750 Loomis Armored Car Svc
452.7750 Armored Transport Services
460.9250 Honeywell, Inc
460.9750 San Diego Alarm Co.
461.0500 Wells Fargo Armored Car
461.1750 Ripco Security
461.2250 Circle T Security
461.3250 Equity Investigative Svcs.
461.3625 Baker Protective Service
461.4500 Beverly Security (Guards)
461.5500 ABA Recovery Service
461.5500 Pacific Security
461.5875 Carlsbad Security
461.6375 Miller Patrol Service
461.6500 ABA Recovery Service
461.6750 Rodgers Police Patrol
461.7250 Columbia Security
461.7500 Gordon Sentry Dogs
461.8500 Alert Security
461.8500 CalGuard, Inc.
461.8500 TJ Fallis Private Investigations
461.8750 CalGuard, Inc.
461.9000 Bernstein Security
461.9250 Omni Mega Security
462.0500 Checkmate Protective
462.1000 De Anza Investigative Service
462.1500 Shield Security
463.2000 Odona Central Security
859.6250 Strong Arm Protective Service

44.2000 Brinks, Inc
151.6550 Security Service
151.8050 Crawford Detective Agency
151.9250 Strategic Security
153.3200 Gulf General Atomic F1- Security
154.5150 Waddingtons Security
154.5700 Pala Security
159.4950 Brinks Armored Car Svc
452.6750 Purolator Armored Car Svc
460.9000 Morse Signal Device
460.9500 A.D.T. Security (Alarms)
461.0500 Beverly Security (Alarms)
461.1250 A.B.M.I. Security Service (Vista)
461.1750 A.D.T. Security (Guards)
461.2250 Network Security
461.3500 Granfield Security
461.3750 Bridwell Patrol Services
461.4750 Pedus Security
461.5500 Jack Kalman Detective
461.5750 Assurance Patrol
461.6375 G.M.I. Security
461.6375 Southern Cal Security
461.6750 G.M.I. Security
461.7000 Westec Security
461.7250 N.C.I. Protective
461.8250 Cal Plant Protection Service
461.8500 Globe Security Systems
461.8500 Fargo Detective Agency
461.8750 Point Loma Security
461.8750 Tipton Patrol
461.9000 Centurion Guard Dog
462.0000 Action Security Service
462.1000 Allegiance Security
462.1250 Protectors Security
462.5500 Pinkerton's Security Service
859.4750 Westec Security
860.6500 Rancho Santa Fe Security

ARIZONA TRIBAL RADIO

Reports say that Modular Communications Systems, Incorporated has finished installation of a communications system to be used by the Navajo Tribal Utility Authority of the Navajo Nation, located in Fort Defiance, Arizona. No word on frequencies yet, but we'll keep you updated.

UNITS, MONITOR YOUR MDT'S

Gary Selfore in Salt Lake City, Utah advises us that MDT's aren't just called MDT's. Mobile Data Terminals found in many police units, paramedic rigs and ambulances are also known over the air as MCT's (Mobile Car Terminals), PDT's (Personal Data Terminals) or MDC's (Mobile Data Computers). Oh, hey, don't forget MoDat, an acronym for Mobile Data Terminal which has also been heard.

"And get this," says Gary. "A recent trade magazine article said that 'Many of the field officers liked the privacy afforded by MDT's. All those folks out there listening on scanners were thwarted; including the news media. Hee hee." Gary wants to know if MDT data will ever be decoded. Probably someday soon, but until then just keep listening, many of the hot calls now go out over the air, with routine stuff cluttering the MDT's.

SCANNING VAIL

Planning on doing some skiing? The slopes of Vail, Colorado are the place to be according to those who know something about the white stuff. Even if your broken leg has you doing time in the lodge, these frequencies should keep you happy.

169.925	White River National Forest	170.525	White River National Forest
151.145	Parks and Wildlife	159.450	Parks and Wildlife
453.100	Vail Police "Blue"	453.400	Vail Fire "Orange"
453.675	Vail Public Works	453.800	Vail Police "Green"
458.800	Vail Police "Violet"	460.425	Vail Police CLEER
155.160	Vail Mountain Rescue Group	151.625	Winterhawk Outfitters
151.895	Winterhawk Outfitters	151.805	Vail Ski Club
151.925	Vail Lodge	151.955	Manor Vail Lodge
152.360	Manor Vail Lodge	461.150	Vail Racquet Club
461.900	Destination Resort Management	464.350	Vail Golf Club

Vail Police 9900 Codes

9900	Out at ___	9905	Foot Patrol
9910	Bar Check	9915	Security Check
9920	Transport	9925	Clearence on Plate/person
9930	Listing on plate / person	9935	Motor Patrol in special area
9940	Bicycle Patrol	9945	Special Detail - Not available for calls
9950	Attempt to serve summons / subpoena	9955	Prisoner processing
9997	Unfinished report	9998	Cancelled case number
9999	Cancelled call		

OES EMERGENCY BROADCASTS ON PACKET

The growing sophistication of scanner listeners' radio rooms are opening up new vistas in communications receiving. Did you know that the California Office of Emergency Services in Sacramento transmits warnings and urgent media information from a control station at headquarters? EDIS - Emergency Digital Information Service - uses AX.25 packet radio protocol. According to Stan Harter, assistant chief of the telecommunications branch of the Governor's Office of Emergency Services, receiving the transmissions is as easy as tuning to 450.0375 MHz with a TNC (Terminal Node Controller) equipped scanner and printer. For the very latest on breaking emergency information in the state, try this out.

UC BERKELEY GETS SWAT TEAM

You can't even go to a university these days without worrying about crime. The University of California at Berkeley has decided to invest in a SWAT Team. Officially known as the High-Risk Entry Team (HRET), the unit is the newest addition to the UC campus police department. The move toward more elite levels of law enforcment follow several campus incidents, most notably a 1990 encounter in which a mentally disturbed gunman held 33 people hostage after killing one student, a violent 1991 protest and a break-in at the Berkeley chancellor's residence. Some say these are isolated encounters, others say the university must change with the times. The times are growing more violent and student and staff protection is paramount. Look for UC Berkeley campus police activity on 464.425, 483.0875, and 484.3125.

SAILING AWAY

Hot off FidoNet from Brian Pruner comes the news that a slew of frequencies have been licensed for the America's Cup races. Brian says that "there will be a trunked system using these frequencies. I'm sure some of these will be talkaround (simplex) use as well. The sites are located in Point Loma, California, at the tip of the point next to Cabrillo National Monument and Mount Miguel." These freqs are a long way from the 470 MHz channels used in the last races. Ah, progress! Don't forget to check 156 MHz maritime channels for boat activity as well.

935.3875,	935.4000,	935.4250,	935.4375,	935.9250,	936.3875,
936.4000,	936.4125,	936.4250,	936.4375,	936.4500,	936.4625,
936.4750,	936.4875,	936.5000,	936.9250,	937.4500,	937.4625,
937.4750,	896.3875,	896.4000,	896.4125,	896.4250,	896.4375,
896.9250,	897.3875,	897.4000,	897.4125,	897.4250,	897.4375,
897.4500,	897.4625,	897.4750,	897.4875,	897.5000,	898.9250,
898.4500,	898.4625,	898.4750			

NEXT TIME AROUND...

Next time in the West section we'll look at frequencies for the Grand Canyon and Yosemite, numbers for the far reaches of Alaska and the beaches of Hawaii and lots of updates from across the west. Don't miss it!

Things That Work

Uniden BC 178XLT, a 100-channel, general purpose desktop scanner

There is another new addition to the Bearcat scanner gang. The BC 178XLT is a nice 100-channel desktop scanner that features coverage of the following frequency ranges:

29.0–29.7 MHz 10-meter amateur radio
29.7–50.0 MHz VHF Low
50.0–54.0 MHz 6-meter amateur radio
108–136.975 MHz aircraft
137–144 MHz military & government
144–148 MHz 2-meter amateur radio
148–174 MHz land mobile & gov't.
406–420 MHz government
420–450 MHz 70cm amateur radio
450–470 MHz land mobile
470–512 MHz land mobile "T" band

Measuring 2-3/4"H x 9"W x 6-1/2" D, the BC178XLT is nicely laid out and is easy to use, in the same manner as most Bearcat desktop scanners. Another nice feature introduced recently is a well-illuminated display. Although a bit on the small side for a desktop, the display on the '178 is nevertheless pretty easy to read.

Included with the scanner are a power pack and metal stick antenna, and a manual which is well written and easy to follow. Like all Bearcat scanners (except the Sportcat, until you get used to it), the BC 178XLT is easy to program. It has 100 memory channels arranged in 5 banks of 20 channels. To access or disable a channel bank, simply press the numbered button corresponding to that bank while in the Scan mode. A small number (1 - 5) will appear or disappear in the upper part of the display, indicating the bank status. The scan rate is 100 channels-per-second, which is quite rapid. The Priority feature is the same as on other recent Bearcat products. Any one channel in each bank can be assigned as Priority, thus enabling one to keep an ear on more than one priority channel.

The BC 178XLT has a 300 step-per-second search feature, allowing you to search for new and/or unusual active frequencies. The standard "enter the upper and lower search limits" feature is still present, of course, along with a pre-programmed search bank. In this bank, police, fire/EMS, air and marine frequencies are pre-programmed, and can be selected by stepping through the ranges manually using the SERVICE button, then pressing the SEARCH button to start searching that band. Of course, the new DATA SKIP feature has been included, to automatically (if desired) bypass those nasty pager frequencies and other data transmissions.

The BC 178XLT also includes a pre-programmed search bank for the weather channels, which is very handy during severe weather. A nifty new innovation to go with the pre-programmed Weather Search is Weather Alert. After finding and locking on to your local NOAA channel, a press of the ALERT button silences the scanner until the National Weather Service sets off their dandy little tone. Alas, I did not get to test the alert feature first-hand, as the local NWS office did not issue any alerts while I was using this scanner.

The BC 178XLT performs very well in the reception department. At work (my standard "Beat it to Death Test" test location), I found reception to be quite good. Air band coverage especially seemed to be very good, and I found very few problems in any band with the intermod and computer-generated birdies I usually experience at work. I was again especially pleased with air band reception; by the improved performance I have noted in several scanners recently, Bearcat seems to have made a real effort to improve air band sensitivity.

There are a couple of drawbacks to the BC 178XLT. First and foremost is the lack of 800–900 MHz coverage. The 800–900 MHz band is now in use almost everywhere, and is indeed becoming very popular; I believe that 800–900 MHz coverage should be standard in a scanner. The other drawback is Bearcat's continued use of car stereo antenna plugs on some of their scanners. BNC connectors cost little, and offer considerably better performance.

All things considered, the BC178XLT is a nice desktop scanner. It is an excellent choice as a dedicated rail or aviation scanner (especially with the improved aviation sensitivity), or for public safety scanning in a smaller city where the local public safety frequencies can be entered and still leave room for the surrounding counties or other listening targets. The BC 178XLT retails for around $239.00 but can be found for less.

By Tom Swisher

Ask The Experts

Q: I'm trying to scan the New Hope Police Department, but I hit a snag. All I get is the dispatcher on 154.725. Have they scrambled the frequency?

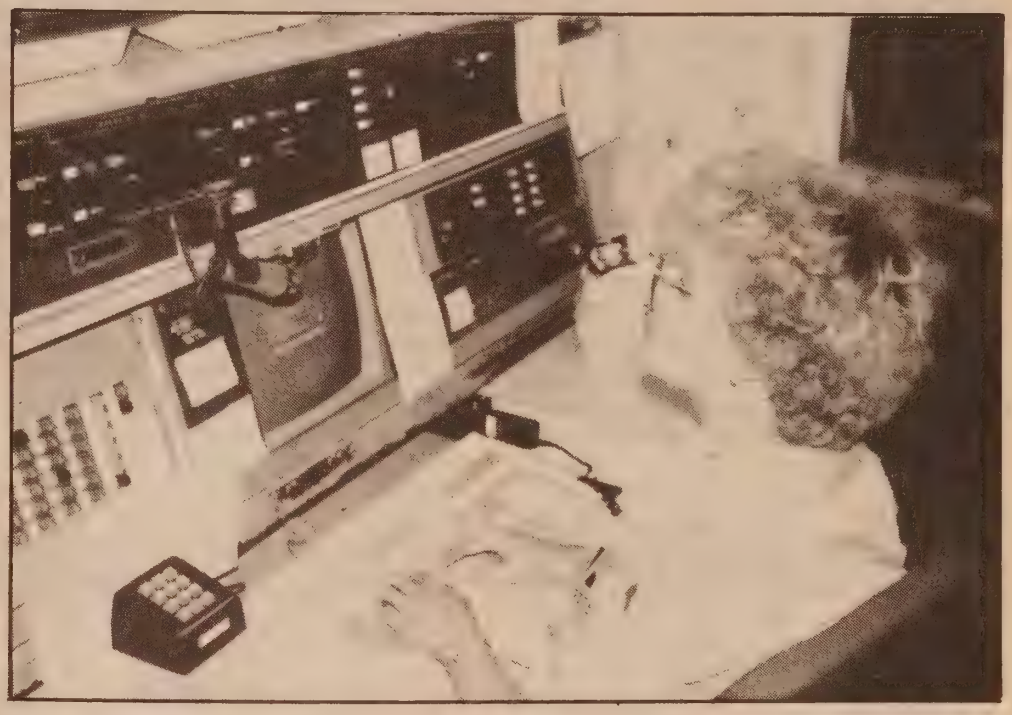
-- Marritt Vanselow
New Hope, Minnesota

A: Two possibilities. The dispatcher and police vehicles are operating on the same frequency and you are simply not close enough to the cars to hear them. In that case, an external antenna might help. Or the dispatcher is on one frequency and the cars are on the second frequency. In this case, it will be necessary to determine the second frequency. If you have a directory, try all police and local government frequencies licensed to the city and you may come up with the channel in that manner. Finally, you can use the search function to find the elusive channel.

Q: I use a Bearcat 70XLT with a converter to receive the 800-912 MHz band. I need 425.030, but the scanner keeps landing on 425.025. Will it still work?

-- Chris Vartarian
Signal Hill, California

A: Trying to get the scanner to receive 425.030 is impossible because that is not a valid frequency according to the band plans. However, since 425.025 is only 5 kHz off the 425.030 frequency, you should have no problem hearing any transmissions on .025 that fall on .030.



A reader becomes interested in dispatching.

Q: Can I mount a CB radio and scanner base antennas on the same tower without them interfering with each other?

-- Robert F. Board
Hamtramck, Michigan

A: As long as you have vertical separation of approximately ten feet, you shouldn't have any problems with interference. The only time you may encounter difficulty is when transmitting with the CB. This may reduce the sensitivity or possibly feed back audio through your scanner during the time you are on the air.

Q: What is an itinerant frequency?

-- Dean Broadman
East Rochester, New York

A: An itinerant frequency is designed to be used by companies or organizations that do their work at different locations, never fixed in one place. For instance, a construction company is wide- ranging, so they would use an itinerant frequency for communications. A traveling circus or a street survey team are other examples of companies that might use itinerants in their work.

Q: Recently the El Paso Police switched over to a new system and I can no longer pick up their channels. I'm using a BC700a. Is there any way I can get those channels back?

-- Oscar Navarro
El Paso, Texas

A: El Paso PD had been working off of a 460 MHz system. Now they've switched to trunking between 856.05--860.25800 MHz.

Ask The Experts

According to our information, the BC700a is capable of receiving the 800 band. You should have no problem finding them with a little diligent searching.

Q: After listening to my scanner for some time, I'm now interested in becoming a dispatcher. Who can I ask about this and what type of training is required?
– Steve Robick
Kane, Pennsylvania

A: Call, write or visit your local law enforcement agency. They should be able to direct you. Also, you may want to contact your city personnel department for an application and training information. Good luck!

Q: I live 25 miles from Indianapolis International Airport and would like to listen to Indy Airport Fire HQ and Dispatch, fire truck to fire truck freq, fire truck to control tower freq and fire incident command. Also having trouble with Marion County Sheriff East/West sectors. Can you help?
– Fred Edstrom, Jr.
Indianapolis, Indiana

A: Indianapolis International operations frequencies might be of interest; they are 154.055, 453.325, 453.475, 453.575. Be aware your distance from the airport might preclude hearing these, depending on what obstructions to radio signals exist. Most fire rigs responding to on-airport emergencies will work off of Ground Control frequencies; in this case 121.8 or 121.9 MHz. For Fire dispatch and truck to truck communications (and Marion County Sheriff), look to the new MECA 800 MHz system between 855-868 MHz.

Q: I'm hearing what sounds like Morse Code in the 460-480 MHz region. What is it?
– Matthew Anderson
Bend, Oregon

A: Most likely you're hearing an ID'ing system for police and fire and other repeaters. If you check you may find that the Morse ID matches the callsign listed for the frequency.

Send your questions to

Ask the Experts

Box 360, Wagontown, PA 19376

"In God We Trust. All Others We Monitor"

Introducing the Official
National Scanning
1995 Mug

It's not easy being a communications professional. There's police to monitor. Action on the fire bands. Tracking down lost planes and wayward ships. Not to mention the occasional accidental cordless phone call.

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From DX Radio Supply, Box 360, Wagontown, PA 19376. Or use your Discover, Mastercard or Visa and call 610-273-7823.

From the people who put "professional" in scanning

800 MHz and Cellular Phones

It all began a couple of years ago. As the story goes – and I honestly don't know how true this is – some senator was talking to his girlfriend on the cellular phone, arranging a little get-together while his wife was away. A scanner listener happened to be monitoring the cellular phone bands, caught and recorded this little tid-bit, and turned the tape over to a local newspaper. Sparks flew and before you knew it, there were laws being passed that made listening to cellular phone calls on a scanner a federal offense. As time went on, it was apparent that no one was paying any attention whatsoever to this fine piece of lawmaking. So another law was passed, this time making it illegal to manufacture scanners that can pick up cellular frequencies. This one did have some impact. The flow of cellular-capable scanners stopped almost immediately. While there are, of course, untold millions of cellular-capable scanners already out there, if you didn't get one before the ban was imposed, your chances of getting one in the U.S. are virtually nill.

One unintended victim of this anti-scanner witch hunt was converters. Converters allowed people who owned non-800 MHz scanners to add 800/900 MHz capabilities rather than buy a whole new scanner when the local police department moved to 800 MHz. Because they also allowed the user to hear cellular phones, they, too, became illegal.

So what's a scanner listener to do? DX Radio Suply is now offering 800/900MHz converter *kits*. So long as *you* put it together, it is legal to sell.

The SCN-1 is a 800/900 MHz converter kit that is a breeze to put together. No prior electrical knowledge is necessary. If you can read, follow simple directions, use your head and a soldering iron, you'll have this done in an evening. The SCN-1 receives 800 to 950 MHZ signals – including cellular – and converts them down to 400 to 550 MHz. The only requirement is that your scanner must receive 400 to 550 MHz. The SCN-1 800/900 MHZ converter kit is $49.95 plus 4.00 UPS. An optional case is 14.95. Shipping is free for the case if ordered at the same time as the kit. You can order using your Discover, Mastercard or Visa by calling 610-273-7823. The cost of your call is refunded. (See our order blank for details.) You can also order by mail at Box 360, Wagontown, PA 19376.

This Valley Is Rich in VHF

"This valley is extremely rich in VHF radio frequencies," intones Ron Cheshire in the beginning of his 46 page frequency directory. The valley he's speaking about is the Indian Wells Valley. Although Indian Wells and environs includes Death Valley, Eastern Kern County, and parts of San Bernadino, Los Angeles County and Beatty, Nevada, it's main claim to fame is Ridgecrest and China Lake, the latter the home of the Naval Air Warfare Station.

Cheshire has put together a nice list of local frequencies and short articles which compliment the frequencies very nicely. It's first person stuff, too, meaning that you can tell that Ron knows what he's talking about from actual experience. He's obviously no armchair expert. The piece "Charlie Range is HOT!" is enough to interest even the dead in tuning in the military jet jockeys streaking over the desert.

The Ridgecrest/China Lake Radio Scanner Book is $13.95 plus 3.00 shipping from Ron Cheshire, 1539 N. China Lake Blvd., Suite 595, Ridgecrest, CA 93555. You can also use your Mastercard or Visa and call 619-375-3379.

New Products Preview

By Larry Miller

RTTY and Even Wefax

If the idea of receiving and decoding RTTY and Wefax (like satellite weather charts) has been interesting but you've been put off by the price of the hardware, Jerry Normandin wants to talk to you.

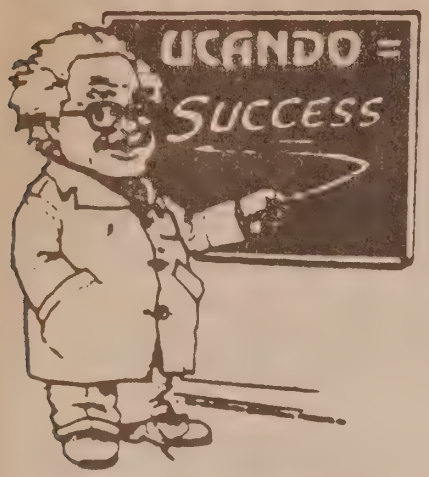
Jerry runs a company called Innovative Technology and he has developed a low cost Wefax/RTTY Demodulator package.

Called MapZation!, it sound pretty incredible. For just $69.95, you get a hardware/software bundle that demodulates Wefax satellite images (up to 64 shades of gray), Slow Scan TV (in full color), RTTY, Baudot and CW (Morse code). What you'll need to pull this off once your MapZation! arrives in the mail is a shortwave receiver capable of SSB reception or a scanner such as the AOR AR1500, says Jerry. You'll also need a personal computer. Jerry supplies everything else, even a list of frequencies.

That's about all we know right now – a pretty attractive tease. We're hoping to be able to provide you with a hands-on review in the near future. Until then, if you'd like to pick up a copy of MapZation! for your own evaluation, contact Jerry Normandin at Innovative Technology, 479 N. Underwood St., Fall River, MA 02720. The phone number is 508-677-1921. Mention that you heard about it in *NatScan*.

New Electronics

If you sometimes feel as if you don't have a really firm grip on electronics but the idea of reading



out of a dry, dusty textbook leaves you cold, the U-CAN-DO Video series is the answer fror you. Each U-CAN-DO tape covers, in depth, a particular aspect of electronics. They're quick, easy-to-follow, and very informative. In fact, these very same tapes are being used all across the country in technical schools, CET's, and industry – and now they're being sold privately to individuals. Eight tapes are available.

The first, The AM Radio, is the most complete video ever produced on AM theory. It starts with the basics of AM radio transmission then proceeds into the 5 stages used in every AM mono receiver. The second and third, FM Radio 1 and FM Radio 2, cover the basics of FM radio technology. There are also tapes on DC, AC (coils, capacitors, transformers, and sine waves; average, peak, effective, and peak-to-peak readings) semiconductors, power supplies, amplifiers and oscillators.

Each tape is 44.95 plus 4.00 UPS from DX Radio Supply, Box 360, Wagontown, PA 19376. You can also order by phone with your Mastercard, Visa of Discover card. The number is 610-273-7823. Whether you're looking for career advancement or just filling in gaps in your knowledge of electronics, U-CAN-DO videos could be the answer you're looking for. PA residents add 6% sales tax. Tapes are not returnable.

CB on TV

Here's the history of CB in a nutshell. Obscure. Fad. Crash. The Dark Ages (Barbarians take over the airwaves.) Coming next: Renaissance? No kidding. Everytime I turn around, I see signs of the return of CB. This time, however, CB is coming back with some civility.

One example is Michael Lee's new video, "C.B. 101."

C.B. 101 is an instructional video. Says Lee, "I want to show CB as a valuable tool while traveling. No cellular phone is going to tell you that there's a wreck up ahead in the left hand lane. No cellular phone is going to warn you of a speed trap two exits up."

Not surprisingly, C.B. 101 focuses on mobile CB, especially the correct installation of the radio and antenna. You'll learn everything from selecting a radio to antenna tuning and purchasing accessories. It is, as Mr. Lee says, "the info you need on the superhighway."

To get your copy of the video, send $14.95 plus 3.00 shipping and handling fto TMI, P.O. Box 3426, Marietta, GA 30061.

Scanning New Hampshire

The new 7th edition of the Official New Hampshire Frequency Guide is here and its 352 pages of vital information. Doing the honors this time is John Bolduc and Scott Rice. There are some interesting new frequency additions, like coverage of New Hampshire Racetracks, including NH International Speedway. There's also complete updating of notification system frequencies, and complete updating of all public safety and busiNess frequencies (like Manchester's new 800 MHz trunked system – not built yet but soon to come on line.) One thing we particularly like was the inclusion of PL tones in the by-frequency section. This will be a big help in identifying unknown stations. Official New Hampshire is $21.95 plus 4.50 shipping from DX Radio Supply, Box 360, Wagontown, PA 19376. Or call with your VISA or Mastercard (610) 273-7823. We pay for your call! See order form for details.

Members' Classifieds

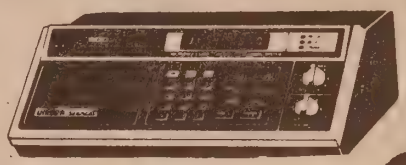
For Sale – Bearcat 8500XLT w/tone board $400 • Motorolla HT6000 UHF 6 channels w/fast charger $300 • Regency 75 channel base/mobile scanner turbo w/800 MHz $125 Motorolla Minitor II low band has 2 channels plus alert mode $125 • Midland UHF 80 channel 40 watt mobile/base $450. Call Robert Graber (201) 345-6116

For Sale – Super converter 9001. New $99.95 Call Jerri Houston (812) 567-4681 or (812) 897-7147.

Med City: The Heart of Hospital Communications

SCANNING AROUND

BY LAURA QUARANTIELLO



The aeromedical helicopter is landing with the victim of a vehicle accident who is hanging on by the proverbial thread. His only chance is quick response by a trauma team, but Doctor Simon hasn't arrived in the Emergency Room and no one can find him. I know, because I'm listening to the paging system at the hospital repeat over and over "Doctor Simon, call Trauma, Doctor Simon, call Trauma" and various other messages as staff hustle to find the on-duty physician. Little do they know that there's been a little problem with one of the elevators, which is descending very slowly to the lobby without stopping at any of the other floors. Doctor Simon is aboard the elevator, or so says Security, who got a call from Maintenance, who got a call from the elevator company, who got a call from the good doctor on the elevator emergency phone. Little do they know, but I do.

I'm five miles from the trauma center, with one bank of my scanner set up to keep track of Med City. I was drawn to hospital monitoring by the frequent aeromedical helicopter flights that pass over my home, enroute to and from the hospital helipad. But I didn't realize that helicopters and ambulances aren't all that goes on at a hospital, there's also paging, security, maintenance and lots of operations that don't require scalpels. Undoubtedly you have a hospital nearby which can provide some fascinating communications. Here's a quick rundown on what you can hear and where you can hear it.

Security operates in various ranges: 151-152, 154-155, 461-468 MHz. Look carefully at itinerant frequencies such as 154.600 and 154.570. Radios may be low powered and audible only for short distances. The security team may be employed directly by the hospital or contracted from an area security company. Look for activity on security company frequencies if it's a contract job. Security patrols the parking lots, looking for loiterers and checking the security of vehicles, maintains control over parking and generally provides exterior security. Inside, security guards provide safety services for the Emergency Room, Surgical, Neonatal and Psychiatric wards, as well as other floors.

Maintenance services operate on 151-152, 154-155, 461-468 MHz. Most, if not all, communications are low powered and relate to everything from electrical, water, and refrigeration to elevators and ovens. You'll hear construction, repair and general upkeep. Separate frequencies may well be used for each department, depending on the size of the medical center.

Paging systems may operate on specific nationwide common frequencies such as 152.0075, 157.450, 163.250 and 453.075 or in ranges like 152-153 and

453-453.175. This paging is usually not the hospital P.A. system that you normally hear inside the building. Most, if not all, staff carry pagers with them and those transmissions are what you'll hear.

Air Operations transmit in the 120-124, 155-156 and 463-464 MHz ranges. Aeromedical helicopters transporting patients to and from a trauma center will talk with hospital radio nurses about patient treatment enroute and talk with ground personnel about helipad security, site weather and fueling needs. There are usually several frequencies used, so check all the listed bands.

Paramedics and Emergency Medical Technicians talk with the hospital radio nurse on 154-156, 462-464, and 468-469 MHz. Initial and secondary patient surveys are given, as well as any updates needed enroute. Trauma Center nurses and physicians may also order treatment via radio.

By the way, Doctor Simon made it to the ER in time and the vehicle accident victim survived, thanks to the fine work of Med City.

PCS Allocations

The new Personal Communications System has been allocated in the ranges of 901-902, 930-931 and 940-941 MHz narrowband. Included here will be various types of communications such as paging and data, according to the FCC. Things are bound to get wild in the 900 MHz band from here on in, so keep an eye on it.

Rocket Launch!

Vandenburg AFB, California continues to be the premier location for rocket and missile launchings on the West Coast. VAFB's Western Test Range Control, radio call "Frontier," and Western Space and Missile Center, radio call "Abnormal 10" operate on launch control primary and secondary frequencies of 266.3 and 386.6. Also, listen for tracking and telemetry ships in the Pacific chatting on Fleet Common frequency 277.8.

FCC

Check the rear view mirror. Are they after you? Paranoia aside, the FCC can be an interesting agency to monitor. Try these frequencies on for size and see what kind of enforcement this federal agency is up to in your area: 167.050, 167.075, 172.800.

Marine Operatior

If you're anywhere near the seashore, you may want to try listening in on a very different type of phone system. AT&T maintains nine channels for ship to shore telephone calls. Here's where the weekend boater tells his wife that he'll be late for dinner because the the fish are biting, or the trawler captain calls his base to complain that the generator has broken down yet again. Of course, you'll hear lots more than just that, but you get the idea. These channels are always busy, but Fridays and weekends can be non-stop. The Marine Operator works on marine channels 24-28, transmissions are duplex:

161.800	(24)
161.850	(25)
161.900	(26)
161.950	(27)
162.000	(28)
161.825	(84)
161.875	(85)
161.925	(86)
161.975	(87)

Bearcat Radio Club's 1995 Show Schedule

Jan 6-9 – Winter CES Show, Las Vegas, NV (Las Vegas Convention Center)
Feb 4-5 – Tropical Hamboree, Miami, FL (Dade County Fair Expo)
Feb 17-18 – Orlando Hamcation, Orlando FL (Central Florida Fairgrounds)
Feb 25-26 – Great Lakes Div. Conv., Cincinnati, OH (Cincinnati Gardens)
Mar 11-12 –Charlotte Hamfest, Charlotte, NC (Charlotte Merchandise Mart)
April 7-9 – Ham Radio '95, Atlanta, GA (North Atlanta Trade Center)
April 28-30 – Dayton Hamvention, Dayton, OH (Hara Arena)
May 20-21 – Rochester Hamfest, Rochester, NY (The Dome)
June – Arlington Hamfest, Arlington, TX (Arlington Convention Center)
June 16-17 – Albany Hamfest, Albany, GA (Albany Convention Center)
July 8-9 – Indianapolis Hamfest, Indpls, IN (Marion County Fairgrounds)
July 29-30 – Atlanta Hamfest, Atlanta, GA (The Galleria)
July 29-30 – ARRL New England Div. Conv., Manchester, NH (Center of NH Holiday Inn)
Aug 5-6 – Jacksonville Hamfest, Jacksonville, FL (Prime Osborn Conv. Cen.)
Aug 19-20 – Huntsville Hamfest & Industry National, Huntsville, AL (Von Braun Civic Center)
Sep 1-3 – Southwest Division Conv., Long Beach, CA (Queen Mary Hotel)
Sep 15-17 – Peoria Hamfest, Peoria IL (Peoria Fairgrounds)
Sept 23-24 Virginia Beach Hamfest & Computer Show, Virgina Beach, VA (The Pavillion)
Sept/Oct – Louisville Hamfest, Louisville, KY (Louisville Convention Center)
Oct 13-16 – MT Convention, Atlanta, GA (Atlanta Airport Hilton)
Nov – Odessa Hamfest Convention, Odessa, TX (Holiday Inn Conv. Center)
Nov 18-19 – Fort Wayne Hamfest, Fort Wayne, IN (Allen County Conv. Cen.)
Nov 18-19 – Florida Gulf Coast Radio Show, Tampa FL (Florida Expo Park)

Holiday Wish List

Simple Scanning Projects

By Wayne Heinen

Now's the perfect time to be dropping those hints to your special someone for the holiday gift giving season. There are plenty of items that would be useful to have and they come in the range from stocking stuffers to the big ticket items.

Let's look at how you can improve your scanning system, and we'll examine the various price ranges too.

What kind of suggestions will fit in the low, medium and higher monetary categories? For openers, organizational tools like bank grid masters can be as low as a dollar each. From there you can look at any number of frequency guides from specialized guides for your local area to large guides like *Betty Bearcat* books. Other books that make great hints to leave around the house are books dealing with other forms of monitoring that you may wish to explore. These include books like Laura Quarantiello's *Citizen's Guide to Scanning* which is all encompassing through such things as *Tune in On Telephone Calls* which deals with a specific area of scanning. The top book price is going to be in the $35.00 range including shipping costs.

Other accessories for under $30.00 can include such items as patch cords to allow you to connect to a stereo, or headphones (preferably with a mono plug so as not to damage your phone jack.) Also most smaller speakers and amplified speaker systems are available in this price range. If you've considered upgrading your audio volume and quality, especially with a handheld, now's the time to drop those hints for holiday gift giving.

In the range above $30 we can take a serious look at an outdoor antenna. If your main problem has been getting the antenna, then solve it now. If you're in a climate that precludes installing it ASAP, Don't Worry! Having the antenna is over half the battle. If you don't think it's true, Joan bought me my first outdoor antenna for Christmas years ago, and it went up that spring!

Above and beyond a new scanner, a higher ticket item that we haven't touched on here before is a frequency counter. Almost as expensive as a new scanner, these helpful devices can add to your frequency list at a relatively fast pace. If mall security has got you wondering, just sit on a bench near where they hang out and when one transmits... BINGO! You got 'em! Frequency Counters range from around $100 for bare bones models to $400 if you acquire a lot of accessories.

There are many items that, if you think of how to get those holiday present hints out to your significant other, may end up with improved scanning for you. I go so far as making up a wish list complete with make, model, and price. I usually include the name and location of the store to get it at, if it's local.

For books and other mail order items, a great hint is a filled-in order form with the name and address left blank. Whoever gets the hint can be sure that the address is filled-in,

in such a way as you may not know if you're getting the book until you open the package.

My wife has occasionally complained about the "lack of the personal touch" in these gifts but, what has changed her mind is knowing that this boy is getting the toys that he REALLY WANTS. As we all know hobbies are luxuries and by getting gifts that cater to your hobby needs, they become guilt free because they are gifts.

There is no better feeling than getting that accessory you've always wanted from a loved one because when you say thank you and use it often, you really mean it.

Speakers Revisited

We've talked audio before and gone into detail on earlier columns on some ways that audio performance can be enhanced. A recent accidental find came about when I was at work. I was trying to follow a fast paced incident on my scanner in the company car. The temperature was 98 degrees and I had the air conditioning going full blast. Needless to say the audio from the PRO-43 on the seat was having lots of trouble getting to my ears.

I also had my 2 meter HT with me. I glanced at my HT's speaker/mic. This is a combination microphone and speaker that also has a push to talk button on it. It's two inches square and has a clip on the back that I use to clip it on the sun visor. Well it's close to an external speaker. I took a chance and plugged it in and I had crisp clean audio at face level!

The model I have is an ICOM HS-65 and it is wired so that it is compatible with both my PRO-43 and PRO-34 handhelds. I've used it in my work vehicle with great success since. It's kind of an expensive external speaker as it retails for around $20. The nice thing though is that it can go anywhere you do and clips to many surfaces. This puts the audio up by your ears, where it does the most good.

That wraps up another scanner project column and another year of being with you through the pages of *National Scanning*. I hope I've been able to help you get more out of your scanner and I hope you have a wonderful holiday season and a great 1995.

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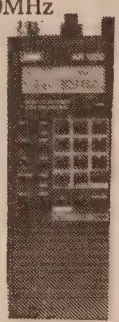

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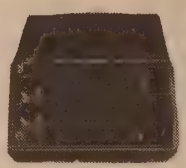

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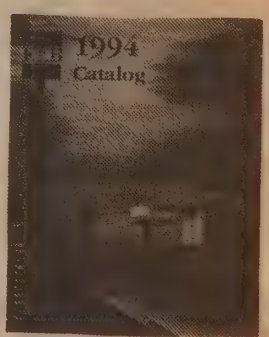

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A Visit to a DX Station

VHF Low Band DX

By Brian Webb

Over the past few years, I've logged numerous 30--50 MHz stations from the Southwest via Sporadic-E skip. For a long time I've wondered what these stations looked like, and I've been intrigued with the idea of taking a trip through the region and visiting a few of the them. During a vacation last May, I realized my dream.

On the morning of May 9th, I was enroute from Gallup, New Mexico to El Paso, Texas. I decided to pay an unannounced visit to Troy's Welding, an Albuquerque company that I'd heard last year on 35.120 MHz by E-skip. When I arrived in Albuquerque, I exited I-10 and found a gas station, and looked up the address in the phone book. Sure enough, the firm was listed. As it turned out, I was only about five miles away. I got back in the car and drove east to Second Street and headed north. After about ten minutes I entered an industrial area and I soon spotted Troy's Welding across the street.

Out front was a trailer converted into an office. Behind it was a large metal workshop. As I walked onto the premises, my ears were assaulted by the sound of clanging metal and machinery. I entered the office. The secretary asked if she could help me. I asked her "Do you remember a letter last summer from a man in California who heard your base station?" "Yes" she answered. I then added, "Well, I'm the guy." She was somewhat suprised. I explained that I happened to be in the area and decided to visit the company. She said that Troy was the person I should talk to.

She led me to the office of Troy, the owner. We found him hunched over a drafting table. He was an elderly man with weatherbeaten skin. The secretary introduced me and I told him how I'd heard his base station on my scanner. He commented "I don't know how the hell you can hear our base station all the way in California when we have trouble hearin' it across Albuquerque." Troy and I talked for about 10 minutes. I learned that the company had been on the same frequency for 40 years and that they'd experienced interference from stations in the eastern U.S. due to skip. One of the workmen walked in and added that when skip has been present, they've had co-channel interference from a taxi company in Mexico. Sensing that Troy had work to do, I thanked him for his time and left.

Figure 1. Ground plane antenna at Troy's Welding

On my way to my car I stopped and took a few photos. I looked up at the antenna. It was strange to see where a signal that I'd heard over hundreds of miles originated (Figure 1). With one of my dreams fulfilled, I got into my car and drove off.

Southern California Sporadic-E

E-skip (Es) made its annual appearance during the late spring and early summer of 1994. Compared to the 1992 and 1993 Es seasons, there was less skip overall. Despite this, I enjoyed an interesting skip season and logged several distant stations. My loggings are summarized in Table 1.

Table 1. Distant Stations Heard in Southern California During the 1994 Sporadic-E Season

Date	Time (UTC)*	Freq. (MHz)	Callsign(s) Heard	Location	Comments
May 17	1501	33.380	KNHK710	Geary, OK	Phillips Pipeline Co. CW ID heard
May 17	1521-1522	48.780	KBI313	Elk City, OK	Oklahoma Natural Gas Co.
May 31	1652	33.300	WZA711	Otis, CO	Natural Gas Pipeline Co. of America
May 31	1738	33.300	KGO843	Sayre, OK	Natural Gas Pipeline Co. of America
Jun 03	1821-1825	32.650	None	Probably western U.S.	Military aircraft?
Jun 03	1851-1853	38.450	Building 848	White Sands, NM?	U.S. military. Building 848 heard calling any telemetry unit in the field.
Jun 10	1802	30.550	Papa 92	Probably western U.S.	U.S. military
Jun 21	1712	37.780	431	Probably Konawa, OK	Probably KRU431, Oklahoma Gas and Electric Co.
Jun 27	1837-1921	38.500	Bravo 119, Fort Sill Range Control U.S. Weapons	Fort Sill, OK	Live fire weapons training. Claymore mine mentioned.
Jun 27	1956	33.380	KQB762	Laneville, OH	Columbia Gas Transmission Corp. Heard via double hop E-skip.
Jun 27	1959	33.380	KQG919	McArthur, OH	Columbia Gas Transmission Corp. Heard via double hop S-skip.
Jun 27	2356-2359	65.750	KENW	Portales, NM	TV channel 3. Audio carrier heard.
Jun 28	1810	37.500	KKL648	Pocohantas, AR	Clay County Electric Cooperative
Jun 28	1854	44.660	KAV270	Safford, AZ	State of Arizona
Jun 28	1902	46.080	KNAW653	Placerville, CA	El Dorado County Fire Dept.
Jun 28	1920	33.180	KAC972	Sublette, KS	Northern Natural Gas Co.
Jun 29	1722	35.120	WNKH484	Ben Lomond, CA	UACC Midwest Inc. CW ID heard
Jun 30	1928	31.140	KIM613	Fitzgerald, GA	Georgia Dept. of Natural Resources Heard via double-hop E-skip
Jun 30	2012	47.180	KFF204	San Angelo, TX	Texas Dept. of Highways & Public Transportation
Jul 09	0027	44.220	Hobbs	Hobbs, NM	Western Oil Transportation Co. Legal callsign is KKR756
Jul 09	0105	37.180	None	Big Lake, TX	Reagan County Fire Dept. Callsign is KNHG320
Jul 09	0125	65.750	KFDX	Wichita Falls, TX	TV channel 3. Audio carrier heard.

Note: All stations were heard in Thousand Oaks, California. CW – continuous wave
* Coordinated Universal Time (PDT + 7 hours)

Automatic Scan Resume

Mod House

BY STEVE DONNELL

An Overview

Here is a modification that is very useful and can be easily installed in almost any scanner. It automatically allows your scanner to resume scanning or searching after it has remained on an active frequency for a set amount of time. It is primarily useful for those who encounter signals that can tend to have long transmission periods. With this circuit in use, after your scanner has stopped on an active frequency for 20 to 30 seconds, it will automatically resume scanning or searching unless you elect to hold the scanner on that active frequency. This can be particularly useful with certain signals in parts of the 800 MHz and 46 MHz bands.

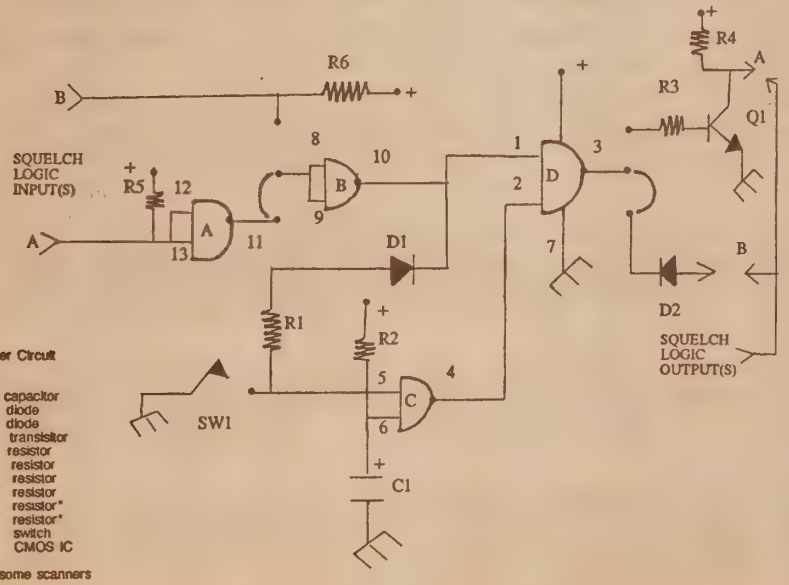
Here's how the circuit works: The circuit is installed in line with the control logic line that connects between a scanner receiver's squelch output and where that same logic line ties into the scanner's controller or CPU IC. (See Diagram 1.) When a channel or frequency becomes active and results in an "open squelch" condition, a "logic Low" condition will be present at the input of logic gate B. This gets inverted by the B gate and when applied into the D gate section gets turned into another "Logic Low" at the D gate output. This is applied into the scanner's control circuit at the same place where the squelch line originally terminated.

The timing part of this circuit takes place at the C gate section. When the SW1 switch is closed, the timer will not be allowed to cycle. When the switch is opened and the receiver's squelch opens, the "logic High" output of the B gate section permits the C1 capacitor to start to charge up through resistor R1. When the voltage across C1 reaches 1/2 of the operating voltage for IC1 the output of the C gate switches to a "logic Low", which when applied into the other part of the D gate forces the D gate's output to switch to a "logic High". This of course makes the scanner's control circuit think that the signal being received has gone away, resulting in the scanner resuming to scan or search.

The reason behind the A and B inputs and outputs on this circuit is that different scanner designs produce different logic "states" during an open squelch condition. With scanners that produce a "logic Low" on their squelch output control lines during an "open squelch" active channel condition, use the B input and output connections. With scanners that produce a "logic High" on their squelch outputs for an open squelch condition, use the A input and output. This will include scanners like the PRO-43 and the new BC-8500.

Do not attempt to install this circuit in your scanner without the aid of a service manual or at least a schematic diagram to help guide you. Identify a circuit connection that runs between the output of the receiver's squelch

Diagram 1



Scan Resume Timer Circuit and Parts List

C1	47 Ufl	capacitor
D1	1N914	diode
D2	1N914	diode
Q1	2N3904	transistor
R1	2.2K	resistor
R2	330K	resistor
R3	22K	resistor
R4	22K	resistor
R5	22K	resistor*
R6	22K	resistor*
SW1	SPST	switch
U1	4011	CMOS IC

*required only on some scanners

These modifications, like many modifications, are experimental in nature. The publisher of this magazine does not test the accuracy of this material and therefore takes no responsibility with respect to the information contained herein. All questions and comments should be addressed to the author at Box 360, Wagontown, PA 19376. Any modifications made to equipment are the sole and complete responsibility of the owner. Modifications are not recommended by manufacturers and invalidate the terms of your warranty. Use of equipment must be in compliance with federal, state and local ordinance.

Mod House

and the scanner's CPU IC or CPU board. This circuit line may be labeled as or connect into a CPU or controller board point which is referred to in the circuit diagram as the Carrier Detect, Scan Control or possibly Squelch.

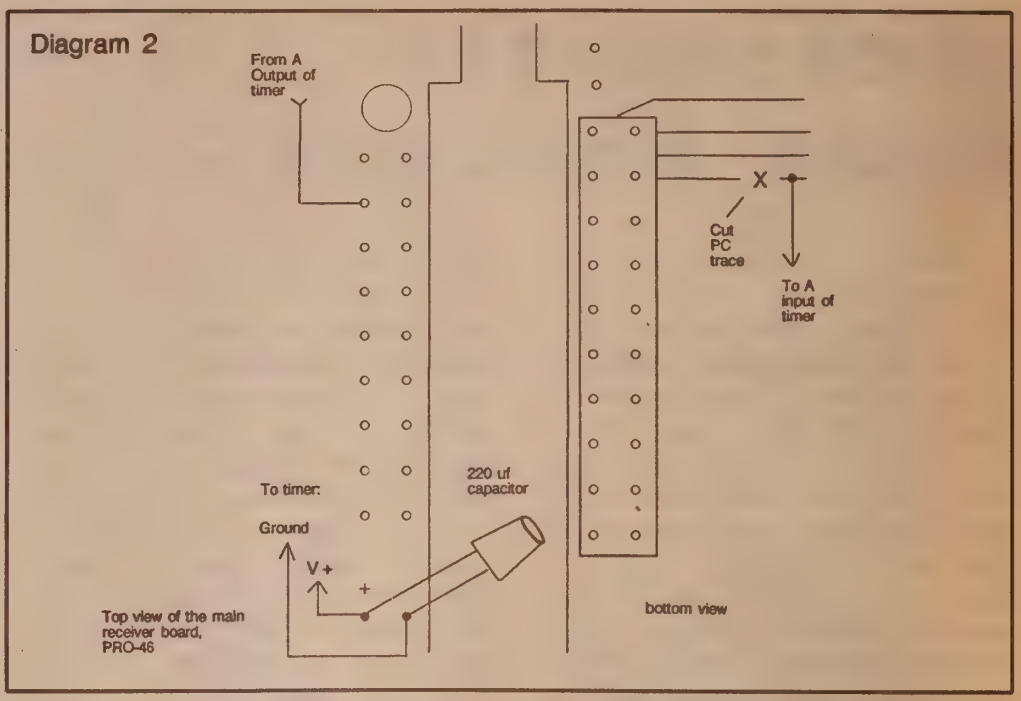
With the scanner operating check this circuit line using a volt meter. See that the voltage on this line abruptly changes as the squelch is manually adjusted to "opens" (noise or signal present), and when the squelch "closes" (audio muted). The voltage should shift between 0.0 (<.5) volts, and up to 4 to 6 volts. With a scanner that produces a <.5 volt condition on the squelch logic line during an open squelch condition, use the "B" input and output connection points on the Auto Scan circuit. For those that produce a 4 to 6 volt condition on a open squelch, use the "A" input and output.

Since some scanners have other things that can connect to the squelch logic lines, try to tie into this line as close as possible to the CPU or logic controller board. Break open this circuit line. Connect the side which comes from the receiver's squelch to the input of the timer circuit, and connect the side which continues into the CPU or Controller to the output of the timer circuit.

Mount the timer ON-OFF switch on the front or along the top of the scanner's cabinet where you can easily get to it.

The Auto-Scan circuit can be fabricated in a number of ways. One of the easiest is a method called "dead bug"style, where the IC is set on it's back, resembling a dead insect. Carefully solder the few components required to the IC leads for support. The IC can be anchored down by a piece of double sided adhesive foam pad. This can be made more secure with by using a short and rigid piece lead wire between the IC's ground pin and a selected ground point on the scanner's PC board.

Diagram 2



Tie together all of the "V+" connections on the Auto Scan circuit and connect this to a +5 volt DC power supply source inside the scanner. With some scanner designs, you may need to add a 22K resistor between the timer's v+ and the squelch logic input.

In operation, with the SW1 switch closed the scanner should operate normally, remaining on any active channel/frequency for as long as the signal is present. With the SW1 open, the scanner will stay on an active channel/ frequency for only about 20 to 30 seconds, and then the audio will mute, as though the signal had gone away. The scanner should resume scanning or searching until another active signal is found.

The pause-on-frequency/ channel interval of the circuit can be adjusted somewhat by substituting different values for R1 -- higher values for longer pause intervals, lower values for shorter ones. By using the right construction techniques, this circuit can be crafted small enough for it to fit into a portable scanner such as the PRO-43.

Installing the timer circuit in the BC 8500

It is very easy to install the resume timer circuit in the BC-8500, in part because of the ample amount of space available and because all of the connections you need to make are accessible on one side of the PC board in the same general area.

Remove the top half of the 8500's cover. Along the right side of the main PC board identify an 8 lead IC. A label on the PC board will identify this IC as IC-8. Most of the connections for the timer circuit can be made directly to the pins of this IC. Given the small size and close spacing of the IC pins, be very careful when soldering to the IC. Try to use wire with a very small gauge size for the connections. Wire wrap type wire works very good for this type of installation. (See Diagram 2.) The Ground connection for the timer is made at pin 4. The V+ connection from pin 8. And the squelch output comes off from pin 7. This goes to the A input of the timer. The circuit trace from pin 7 runs over to the left. Towards potentiometer VR-3, along the lower right of

Mod House

VR-3 you will notice that the PC trace transverses a tiny "thru-hole". This is a convenient place to tie in the A output of the timer circuit.Cut a small break in the PC trace just to the right of the thru-hole. Before you do this, verify with an multimeter that this is the correct PC trace which does in fact connect back over to pin 7 of IC-8.

The ON-OFF switch for the timer can be mounted through the back of the case. Be VERY sure to remove ALL metal particles, that fall into the case when you drill the hole. A safer approach may be to use one of the holes on the side of the case which are meant for use with the mobile mounting bracket. If you do this, you will need to cut a small wedge from the upper half of the cover so it can be reinstalled over the switch.

Installing the timer circuit in the PRO-46 scanner.

Remove the rear cover, then carefully lift out the receiver PC board. The receiver PC board is held in place by a multi-pin connector along it's right edge. (See Diagram 3.) The squelch logic line is carried off the receiver PC board via a pin which is the second from the top on the inside row. Identify the PC trace which connects to this pin. Use a sharp hobby knife to scrape away some of the green insulating coating from this trace. Use a multimeter in it's continuity mode to verify this is the right PC trace. Then use the knife to cut a break in the trace. Be careful not to cut any adjacent traces.

Connect a short length of small gauge wire to the PC trace on the side away from the multi-pin connector.This will go to the A input of the timer circuit. You will also need to add a 22K resistor from the V+ of the timer circuit to the A input as well. The remaining connections to the timer can be made on the top side of the receiver board. Be careful to line up the pins for the multi-pin connector when you reassemble the two halves of the radio.

Output A from the timer is connected to the solder terminal side of the pin which had the squelch logic PC trace connected to it. The ground and V+ connections for the timer are made by connecting leads over to a 220 Uf capacitor located at the bottom of the multi-pin connector, the ground connection from the - side of the capacitor, the lead closest to the outside edge of the PC board and the V+ connection from the + side of the capacitor.

The easiest place to mount the ON-OFF switch for the timer is by removing the earphone/ external speaker jack at the top of the receiver PC board. Be sure that you install a jumper lead across the 2 "hot" mounting pads where the jack was installed, otherwise you will not hear any sound from the internal speaker. If you need to retain the use of an earphone jack, a new one can be installed in the lower right corner of the rear of the case, just above the partition for the battery compartment. The jack can be installed by enlarging the hole for the cover screw or by making a new hole through the side of the case.

Fabrication of the timer circuit is made in what I call "flat pack" style. This is a variation of "dead bug" style where height or headroom space is very limited. Such as the case is in many portable scanners. Start by care- fully bending the leads for the IC used in the timer so they line up flat and perpendicular to the body of the IC. Then trim the length of the leads back by about half. Then start adding the other components for the timer. The resistors for instance can be set directly along the side of the IC. Also try to make double use of as many pins as possible. For example, use pins 5 and 6 as the C gate input so the ground for the capacitor can go directly to the ground connection at pin 7. When completed and tested, carefully wrap the timer circuit in a couple of layers of electrical tape and set it in the middle of the receiver board.

Diagram 3

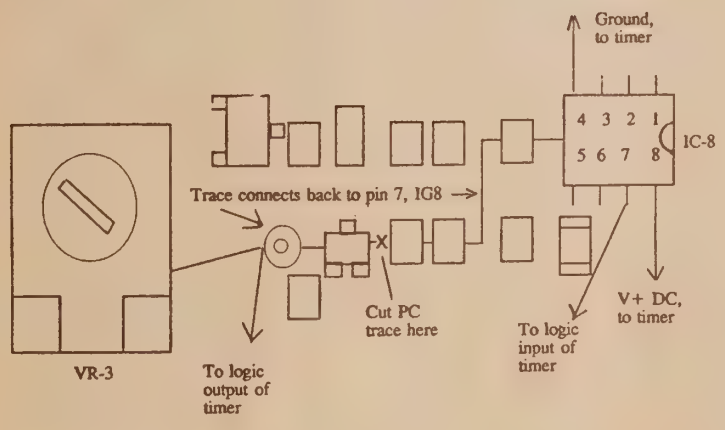


Table 2. UHF SATCOM Yagi Antenna Construction Data

Component Dimensions and Materials

Component	Length (inches)	Thickness (inches)	Width (inches)	Preferred Material
Reflector	22.41	0.125	-	Brass brazing rod
Driven Element A	10.65	0.125	-	Brass brazing rod
Driven Element B	10.65	0.125	-	Brass brazing rod
Director 1	20.34	0.125	-	Brass brazing rod
Director 2	20.20	0.125	-	Brass brazing rod
Director 3	20.06	0.125	-	Brass brazing rod
Director 4	19.92	0.125	-	Brass brazing rod
Boom	48.5	0.75	1.5	Wood

Element Spacings

Elements	Spacing (inches)
Reflector to Driven Elements A & B	9.04
Driven Elements A & B to Director 1	9.04
Director 1 to Director 2	9.04
Director 2 to Director 3	9.04
Director 3 to Director 4	9.04

Continued from page 22

cable varies, even though it was supposedly made to the RG-58 specification. When buying coax, avoid the inferior, lossy cable and look for products from manufacturers such as Belden, Carol, and Remee.

The RF connectors are another easily overlooked part of the antenna system. They provide the electrical and mechanical connections needed to hook the parts of the receiving system together. Unfortunately, like coax cable, connectors also exhibit loss. The amount of loss is determined by the quality and design of the connectors. Connectors come in various grades ranging from inexpensive, solderless types to expensive products made to stringent military specifications. As a rule, the higher the quality of the connector, the lower the loss. Whenever possible, shy away from using the inexpensive connectors and use those made to military specifications. Loss also varies with the connector design. BNC connectors, which are widely used on scanners and scanner accessories, have fairly low loss. Even better are type N connectors which provide a better mechanical connection and lower loss as well. In most cases, beginning SATCOM monitors will be buying their cables and other antenna system components ready-made. But if a listener should ever be interested in building high performance antenna systems, mil-spec connectors, preferably type N, should be used whenever possible.

The fourth antenna system component is the mast which should be made of wood or another non-metallic material and tall enough to raise the antenna above any obstructions. In most cases, the antenna doesn't need to be very high off the ground: a height of as little as 6-feet will often suffice. The mast should be built and mounted so that the antenna can be rotated from east-southeast to west-southwest and tilted from 0 to 60 degrees above the horizon.

A receiving preamplifier is used in many antenna systems to pull UHF SATCOM signals out of the noise and boost them to overcome cable and connector losses in the antenna system. The amount of amplification produced is called gain and is measured in dB. Unfortunately, preamp gain comes at a price. Besides amplifying signals, an amplifier also generates radio noise which can mask a weak signal and offset the gain. The amount of noise produced is called the noise figure and is expressed in dB. Another problem with preamps is their tendency to overload. When overloading occurs, you'll hear a nearby station on its actual frequency and phantom signals on one or more frequencies. For example, overloading can cause a paging station on 152 MHz to appear in the 248-270 MHz SATCOM band and create severe interference. Preamps are thus best suited for locations free of local interference such as suburbs or rural areas. Yet another drawback to using a preamp is the cost. Fully assembled units cost over $50. For less than half of that amount you can build a SATCOM antenna that will provide several dB of gain without self-generated noise or overloading.

Preamplifiers come in two types: wideband and tuned. Wideband units amplify signals across a wide swath of the radio spectrum (such as from 100 to 1000 MHz). Tuned preamps, on the other hand, only work over a narrow range of frequencies (such as 200 to 270 MHz) but generate less internal noise and are much more immune to overloading. If you decide to buy an amplifier, look for a unit with at least 15 dB of gain and a noise figure of 1.0 dB or less.

Three preamps that perform well are the GRE Super Amplifier, Grove PRE-4, (now superceded by Grove PRE-5, $89.95) and Hamtronics LNW-220. Both the Super Amplifier and PRE-4 are wideband

Table 3. Suppliers and Products.

Supplier	Products
DX Radio Supply P.O. Box 360 Wagontown, PA 19376 610-273-7823	GRE Super Amplifier Preamp PRE-4 Preamp (Superceeded by Grove PRE-5) Grove Scanner Beam Log Periodic Antenna
Ham Radio Outlet 800-444-0047 800-854-6046	Create CLP5130-1 Log Periodic Antenna Create CLP5130-2 Log Periodic Antenna Diamond D-130J Wideband Discone Antenna
Hamtronics 65 Moul Rd. Hilton, NY 14468 716-392-9430	LNW-220 Preamp Kit LNW-220 Assembled Preamp Circuit Board

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units and are available fully assembled from DX Radio Supply. The LNW-220 is a tuned preamp and is sold both as a kit and an assembled circuit board. Regardless of which LNW-220 you buy, you'll have to mount it in a case and provide an external power source.

The above antenna system components can be assembled into a variety of configurations. The possible combinations of components are too numerous to describe here. However, three antenna system options deserve mention. For listeners in rural locations, one approach would be to use a wideband preamplifier with a groundplane antenna designed for the center of the SATCOM band (259.4 MHz) or a discone. Such a system would allow for good reception of UHF SATCOM signals from satellites with elevations above 40 degrees. Reception below 30 degrees would be limited to only the strongest signals. Besides providing satisfactory satcom reception, the use of a wideband preamp would enhance weak signal reception on other bands. Rural monitors interested in hearing weak signals over a wide range of frequencies plus SATCOM should consider combining a wideband preamp with a log periodic. The third, and perhaps simplest, option would be to forego the use of preamp and obtain the required antenna system gain by using a yagi antenna designed for the 248 to 270 MHz band. A six-element yagi would have sufficient gain to provide good recep- tion for satellite signals with eleva- tions under 30 degrees. Since a pre- amp isn't used, overloading isn't a concern and the yagi can be used in any location. Furthermore, a six-element SATCOM yagi can be built for under $20.

Plans for building a six-element yagi antenna are presented in Figures 1 and 2 and Table 2. The elements can be made from 0.125-inch uncoated brass brazing rods available from welding supply shops or uninsulated, solid copper wire. Virtually any wood can be used for the boom. Poplar's a good choice, due to its fine grain, strength, and low cost. An essential part of the antenna is the transformer which couples the yagi to the coax. The transformer is constructed from two lengths of RG-59 coax laid side by side with their center conductors soldered together and the braids similarly connected at each end. One end of the transformer is soldered to the yagi's driven elements and the other end is soldered to the coax. When building the yagi and transformer, keep in mind that precision counts. Try to keep the lengths of the antenna elements and transformer coax sections and element spacings to within 0.05- inches of those given in Figure 2 and Table 2.

Table 3 gives information regarding suppliers of antennas and preamps suitable for SATCOM monitoring along with product information.

Receiving System Setup

The first step in setting up a SATCOM receiving system is finding a suitable location for the antenna. Look for an antenna site that provides and unobstructed view of the satellites of interest, but is close enough to the receiver to require a cable run of 25 feet or less. Once a suitable site has been found, mount the mast.

Next, the antenna needs to be aimed and mounted. Bring the antenna, scanner, coax, extension cord, and tools to the base of the mast. Plug in the extension cord and receiver. Refer to Table 4 to find the frequency of a continuous trans- mission from the satellite group of interest. Program the frequency into the scanner, select FM narrow mode, and rotate the squelch control fully counterclockwise. Connect the coax to the scanner and antenna. Pick up the antenna and mount it loosely to the mast.

Sweep the antenna across

Table 4. Frequencies for Antenna Aiming.

Satellite Group	Mid-Pacific	100 W	Mid-Atlantic
Frequencies (MHz)	250.450 251.960 252.040	250.350 250.460 250.650 252.140 252.160 252.185 253.265 257.160	250.450

Note: Frequency data for the mid-Atlantic satellites is incomplete. Other continuous transmissions probably exist between 250.0 and 254.0 MHz. If necessary, search this area in FM narrow mode using 5 KHz steps.

Table 5. U.S. Military UHF SATCOM Frequencies. (MHZ)

West Coast & Eastern U.S.		Central U.S. (90-113 W)	
248.850	261.650	248.850	262.250
248.875	261.675	248.875	262.275
248.900	261.700	248.900	262.300
248.925	261.725	248.925	262.325
248.950	261.750	248.950	262.350
248.975	261.775	248.975	262.375
249.000	261.800	249.000	262.400
249.025	261.825	249.025	262.425
249.050	261.850	249.050	262.450
249.075	261.875	249.075	262.475
249.100	261.900	249.100	262.500
249.125	261.925	249.125	262.525
249.150	261.950	249.150	262.550
249.175	262.050	249.175	265.550
249.200	262.075	249.200	267.050
249.225	262.100	249.225	268.450
249.250	262.125	249.250	269.950
249.275	262.150	249.275	
249.300	262.175	249.300	
249.325	262.200	249.325	
249.350	262.225	249.350	
249.375	262.250	249.375	
250.650	262.275	250.650	
252.150	262.300	252.150	
253.850	262.325	253.850	
254.150	262.350	254.150	
255.550	262.375	255.550	
257.150	262.400	257.150	
257.550	262.425	257.550	
258.650	262.450	258.650	
261.450	262.475	262.050	
261.475	262.500	262.075	
261.500	262.525	262.100	
261.525	262.550	262.125	
261.550	265.550	262.150	
261.575	267.050	262.175	
261.600	268.450	262.200	
261.625	269.950	262.225	

Notes: Use FM Narrow mode when monitoring these frequencies. The frequencies given for listeners in the Central U.S. are for the satellites near 100 W. Those listed for the West Coast and eastern U.S. are a combination of the frequencies used by the 100 W and mid-Pacific and mid-Atlantic satellites. Listeners in the Central U.S. with very high gain antenna systems may be able to hear one of the mid-ocean satellites.

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the sky until you find the signal. In the continental U.S., the satellites will be found in a swath of sky between the east-southeast and west-southwest and elevations of 0 to 60 degrees. Point the antenna so that the signal is the strongest. With a ground plane or discone antenna, experiment with unusual antenna orientations including sideways and upside down. When the signal is strongest, hold the antenna still and tighten down the mounting hardware. If you're using a yagi, quad, or log periodic, be sure to mount it so that the elements are vertical. This vertically polarizes the antenna for optimum reception of military aircraft and other terrestrial signals (the antenna would have to be re-aimed at the horizon for best reception of these signals).

Once the antenna has been mounted, use Plumber's Goop or a similar sealant to waterproof the antenna connections, exposed cable ends, and connectors. Then route the coax away from the antenna and into the house. Bring the scanner, extension cord, and tools indoors.

The final step is to configure your scanner for SATCOM reception. Refer to Table 5 and program the frequencies for your location into the scanner's memory. Make sure that for each frequency entered, FM narrow mode and the delay function are selected.

Monitoring Techniques

To monitor UHF satellite traffic, use the following technique: turn the squelch knob fully counter- clockwise. Then carefully rotate the knob clockwise until the noise barely stops. Next, make sure that none of the SATCOM frequencies are locked out. Then command the scanner to scan the memories loaded with SATCOM frequencies. When your scanner stops on a signal that sounds like noise, lock out the channel and resume scanning. You should eventually find an unencrypted voice transmission.

You can improve your chances of hearing clear voice traffic if you listen during certain times. The best time to monitor the various satellites are listed in Table 6. Though most traffic is heard during the times shown, activity has been noted on weekends and, at times, outside of these ranges. As a rule, the more you listen, the more you'll hear.

Table 6. Recommended Listening Times.

Satellite Group	Mid-Pacific	100 W	Mid-Atlantic
Days	Sunday-Monday Monday-Tuesday Tuesday-Wednesday Wednesday-Thursday Thursday-Friday	Monday Tuesday Wednesday Thursday Friday	Sunday-Monday Monday-Tuesday Tuesday-Wednesday Wednesday-Thursday Thursday-Friday
Time	1100-0100 PT	1100-1600 ET	2300-1600 ET

What You'll Hear

Most of the UHF SATCOM transmissions are high speed data that sound like noise. These digital transmissions are apparently computer data and encrypted voice. Clear voice traffic is occasionaly heard from the mid-Pacific and mid-Atlantic satellites. Sadly, in recent months the once common unscrambled voice from the spacecraft near 100 degrees west has virtually disappeared. Since listeners in the central U.S. (between 90 and 113 degrees west) will have difficulty hearing either the mid-Pacific or mid-Atlantic satellites, they may find SATCOM monitoring a frustrating pursuit.

When clear voice is heard, it's usually stations checking out their SATCOM gear before going into scrambled mode. Sometimes you'll hear a voice saying "One..one... one..." or "Test...test...test..." This is probably a radio operator sending a signal up to the satellite and listening for himself on the downlink. Most of the clear voice traffic is mundane, but occasionally you'll hear something interesting like U.S. Army troops on night maneuvers, disaster relief communications, and so on. One of the oddest things I've ever heard over SATCOM was an attempt by servicemen to persuade a female GI to accompany them to a topless bar. She declined the invitation stating "Chics don't turn me on."

Conclusion

Monitoring military UHF SATCOM isn't necessarily easy, but it can be highly rewarding. I monitor a wide swath of the radio spectrum ranging from longwave through microwave. Many of my most interesting catches during the past two years were made via UHF SATCOM. If I hadn't been monitoring the satellites, I wouldn't have heard the Hurricane Iniki relief effort in Hawaii, the transport of the bodies of helicopter crash victims from Antarctica to New Zealand the Army's 10th Mountain Division preparing to go to Somalia, and other interesting traffic that I'd rather not disclose. If you live on the West Coast or in the eastern U.S. and own a suitable scanner, you should give UHF SATCOM monitoring a try. I did, and my only regret is that I didn't try it sooner.

Glossary

C-Band – 3,700-6,500 MHz
dB – Decibel. A measurement of signal gain or loss.
ET – U.S. Eastern Time
FLTSATCOM – Fleet Satellite Communications. A family of U.S. military communications.
L-Band – 500-1,549 MHz
LEASAT – Leased Satellite. A family of U.S. military communications satellites.
MHz – MegaHertz
PT – U.S. Pacific Time
RF – Radio Frequency
SHF – Super High Frequency (3,000-30,000 MHz)
UFO – UHF Follow-On. A family of U.S. military communications satellites.
UHF – Ultra High Frequency (225-3,000 MHz)

Understanding Antennas

with Gene Hughes

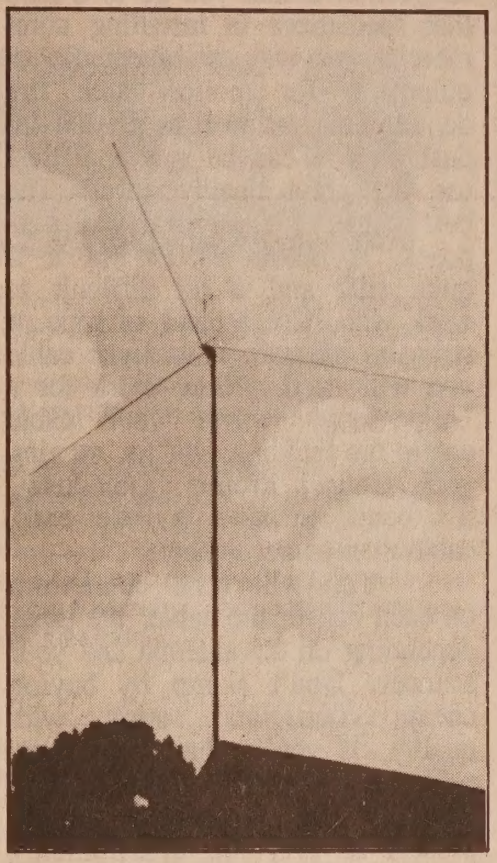
SCANNER SCHOOL

In our early years in grade school, we were taught that before Columbus discovered the Americas, people thought that the world was "flat." Nonsense! The ancient Egyptians and Greeks knew the world was round. Anyone who stood at a seashore watching a boat vanish over the horizon, and then stopping to think about it, had to figure out that the earth was curved. When these people went out in boats and lost sight of land, they saw boats even farther away slowly dip down and disappear. Therefore, the earth kept on curving, and that meant the earth had to be round. Ancients also saw the shadow of the earth on the moon during an eclipse.

This brings us to what we refer to in radio as "line of sight:" for VHF-UHF radio reception. Actually, the radio waves do bend a little over the horizon: Just how much depends on the frequency. Just as ancients knew that the top of a ship was the last part to be seen as it sailed away, we know that the higher we can place our scanner antenna, the greater will be the distance at which we can receive signals. For practical purposes, there are limits to this.

The second factor that will affect scanner reception is the type of antenna used. Antenna design is an exacting science. Ideally, the antenna should be an exact match for the frequency being received. Obviously, this cannot be done for a scanner covering a wide range of frequencies within a band, as well as several different bands. The solutions, involving compromise, have been nothing less than ingenious.

The third factor is the means we use to get the signal from the antenna to the radio, a poor link between the two can undo all the advantages of location and type of antenna.



This article will concentrate on some basic antennas and installations that you should be able to handle alone or with the help of a friend or family member. For more complicated antennas systems, we suggest you see the article on antennas that can be found in the listener's Guide book section of *Police Call*.

There are several types of antennas:

• Collapsible rod – This is the antennas that comes with most desk-top scanners. It is better than no antennas at all, but not much. My own opinion is that anyone buying a new scanner should break the the rod as soon as the box is opened, thus forcing the installation of a "real" antenna. Of course, if all you wish to hear are nearby repeaters and base stations, read no further. You will never know what you are missing.

• Wideband – Designed to receive frequencies over a wide range. The *discone* is an example, but unless it has a low-band vertical element, reception drops off below about 100 MHz. Another disadvantage of the wideband type is that it also brings in unwanted frequencies equally well, which can contribute to the various types of interference such as external intermodulation and spurious signals. In metropolitan areas, these extraneous signals can contribute to overloading the receiver and blocking wanted signals.

• Multiband – These are designed to be most efficient receiving signals in the bands used in scanners: VHF low band, VHF high band, UHF and the 800 MHz band. One of the best reasonably priced antennas is the Scantenna. As will be discussed below, a mobile multiband antenna may be used when there are no alternatives.

There is a saying in the real estate business: "The three most important factors in buying a home are location, location and location." The same holds true for installing an antennas. The first "location" is to get it outside of the building: most preferably, on the roof. The second "location" is to place it where there are

few or no obstructions and sources of interference. The third -- and probably most important -- "location" is the consideration of safety.

The simplest way to install an outside antenna is to mount it on a five-foot or ten-foot pole. This avoids the necessity of an extensive network of guy wires. If roof-mounting is feasible, find a location that is:

- As far as possible from any other antennas or metal poles.
- Away from electrical devices such as air conditioners or elevator machinery.
- Convenient for running the cable to your scanner. When possible, try to keep the length of cable to fifty feet or less.
- Not a potential hazard if the antenna and mast fall or are blown over.

There are many ways to install an antenna on a roof. Buildings usually have one or more vent pipes to which the antenna support pole may be easily attached with simple brackets. There are also specialized brackets for mounting to a chimney, the peak of the roof or the rook eaves. Another type of mount is an adjustable tripod that will work on either a flat or sloped roof. Since the tripod is several feet tall, use a five foot mast. If none of these are feasible, there are brackets that permit mounting on the side of a building. Most stores that sell scanners also sell these brackets and mounts.

Next comes the choice of cable to connect the antenna to the scanner. Some antennas, such as the Scantenna come with cable, but you may wish to replace it for greater efficiency. Cables that are about the thickness of a pencil should be avoided unless the run is less than about twenty feet. One exception to this is a cable known as RG-6, that is usually used for TV. Even some designed by variations of RG-8 or RG-213. Our suggestion is that you go to a shop that specializes in installing commercial two-way mobile radio equipment for police and fire departments, as well as private industry. You can be sure that they use the good quality cable. The best cable, for all practical purposes, is Beldin #9913 but it is quite stiff and a bit difficult to work with. Use a piece of rope or string to measure how much cable you will need. Allow extra for a "drip loop" where your cable enters the building and for moving your scanner around. Obviously, it's better to have a little extra cable than come up short.

You will need connectors on each end of the cable, the types depending on the antenna and your scanner. Don't skimp by buying cheap connectors: stick with quality. If you've had experience soldering electrical components, attaching the connectors should present no problem. Make doubly sure that your solder connections are firm and that you have no cold solder joints. Attach the antenna-end connector before you start the job, and the scanner-end connector as the very last item. If you are a newcomer, ask your dealer to attach the connectors.

Plan the entire installation job at least a day ahead of time, and go through a "dress rehearsal" on the ground. Here's what you will need:

- Antenna, assembled
- Mounting brackets
- Cable and connectors
- Silicon grease
- Electricians tape
- Tools

We cannot overstress the consideration for safety at all times! One of our readers, his wife and son, were all electrocuted while attempting to install an antenna! Unplug your scanner. Assure that the antenna cannot fall on dangerous wires, especially while you are installing it. If you have to use a ladder to access the install location, have someone help you or be within earshot.

1. Install the mounting brackets.
2. Attach the cable to the antenna. Coat the entire connection liberally with silicon grease and then wrap it with electrical tape. Never, never use a product called "conducting grease."
3. Tape the cable to the pole at several points to prevent its whipping in the wind.
4. Place the antenna in the brackets and tighten all screws and bolts.
5. Run the cable to the scanner, leaving a little loop of cable hanging down where it enters the building.
6. Plug in your scanner (you'd be surprised at how many people forget), turn it on and find out what you've been missing.

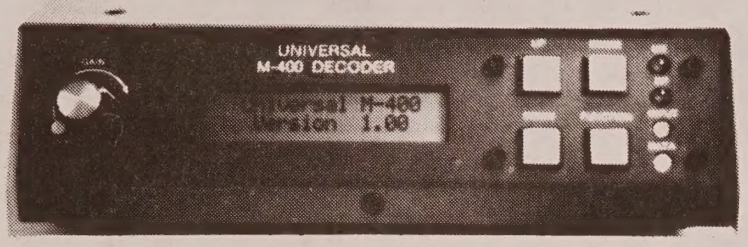
Can't use the roof? There are still ways you can improve reception. Several manufacturers offer multiband antennas with a flat magnetic base. They are designed to be used on a vehicle, but their compact size permits use in tight spaces. If you have an attic with about four feet of clearance and a non-metallic roof, it's a perfect location. By placing the antenna on a flat piece of sheet metal, measuring at least two feet to a side, performance will be enhanced.

If you have no attic, try placing the mobile antenna near a window, or on a window ledge. In a worst-case situation, cut off the excess cable and put the mobile antenna on top of your scanner. You will still get better reception.

If you live in a metropolitan area and you are a true, dyed-in-the-wool scanner buff, there is one other thing you can do. Buy a condo or rent an apartment on the twentieth floor of a high-rise! Just make sure it is a corner unit and has lots of windows.

The Ultimate Accessory for Every Shortwave & Scanner Enthusiast

UNIVERSAL M-400



Many early teletype listeners started their monitoring hobby with code readers. However, readers have fallen out of favor in recent years because of their limited performance, limited mode coverage and lack of features. The M-400 reverses this trend, providing a high quality demodulator, extensive mode coverage, state-of-the art display and parallel printer port. The Universal M-400 incorporates capability never seen in a reader before. It is the ultimate affordable accessory for the SWL and the scanner enthusiast.

The M-400 provides all the benefits of a reader, without the limitations. The M-400 is totally self contained; there is nothing else to buy. It is compact and operates from 12 VDC making it a natural for auto or boat installations. The two line liquid crystal display provides a (40) forty characters readout (not just 8 or 16 like other readers). This super-twist LCD can be read from any angle, and the front of the M-400 is sloped to provide the optimum in viewing and operating convenience. LED indicators for *Mark, Space, Input* and *Data* are provided. A gray, all-metal cabinet provides a solid look of quality. For the shortwave listener, the M-400 provides all the standard reception modes ... and then some.

● **SHORTWAVE MODES**
- **Baudot,** the original RTTY mode, can be copied in all five speeds (45, 50, 57, 75 and 100 baud). Baudot is used by some press agencies and weather stations.
- **SITOR A and B** are extremely popular teletype modes on shortwave. SITOR is used for communications between ships and coastal stations.
- **FEC-A** is a new press-diplomatic mode gaining wide acceptance primarily in Europe. Extensive FEC-A traffic can be monitored in North America during the day.
- **ASCII** at 75, 110 and 150 baud.
- **SWED-ARQ** This Swedish diplomatic mode can be copied in the U.S.A. during the day.
- **FAX** - That's right; with a graphics compatible parallel printer attached, you can copy FAX from shortwave. You can print weather maps and charts from around the world. The printer is optional. (FAX decoding is at 120 LPM, 576 IOC).

● **VHF-UHF MODES** will be enjoyed by the scanner enthusiast.
- **ACARS** Stands for *Aircraft Communications Addressing and Reporting System*. This new aviation teletype mode is in wide use at most major airports. Extensive traffic can be copied from both nearby commercial airports and aircraft. The M-400 is the first unit to offer this capability.
- **GOLAY** digital pager mode.
- **POCSAG** digital pager mode.
- **DTMF** decoding of all 16 DTMF digits.
- **CTCSS (PL)** frequency decoding is also available. Read all 41 standard tones.
- **DCS** (*Digital Coded Squelch*, also referred to as *Digital Private Line*) all 104 standard codes.

The M-400 has several functions that you can program. With the use of an optional speaker, the M-400 can be programmed to pass only the audio you want to hear! You can set the M-400 to only activate the speaker when it receives a CTCSS, DCS or DTMF code of your choosing. The M-400 comes with an instructive *Owner's Manual* and a wall adapter that provides 12 VDC. Note: For accurate DCS and PL reception, direct connection to the receiver's discriminator may be required. One year limited warranty. Manufactured in the U.S.A. by Digital Electronic Systems. The M-400 is *the* affordable accessory for every shortwave or scanner enthusiast. Available now for only **$399.95** (+$6). Order *#0400.*

RECEPTION MODES

- **RTTY Baudot**
  45, 50, 57, 75 and 100 baud.
- **SITOR A**
  ARQTOR, Amtor A
- **SITOR B**
  FECTOR, Amtor B, NAVTEX
- **ASCII**
  75, 110 and 150 baud.
- **SWED-ARQ**
  3, 9 or 22 character groups.
- **FEC-A**
  96, 144 and baud.
- **Facsimile (FAX)**
  120 LPM 576 IOC
- **POCSAG**
  Digital pager mode.
- **GOLAY**
  Digital pager mode.
- **ACARS**
  VHF Aviation teletype mode.
- **DTMF**
  16 digits
- **CTCSS (PL)**
  41 standard frequencies
- **DCS (DPL)**
  104 standard codes

SPECIFICATIONS

Dimensions	8.75"W x 2.5"H x 8"D
Weight	2 Lbs. (5 Lbs. ship with PS)
Display	LCD two line 40 char. total
Filter Tones	Low tone (mark = 1275 Hz)
	Fixed: 170, 425 and 850 Hz
	Variable: 100 - 1000 Hz
Power	11-16 VDC @ 200 ma
	AC wall adapter included.
Speaker Input	4-16 Ohms 100 MW max
	Mono mini jack (1/8")
Discriminator Input	10K Ohms .25V max
	Mono mini jack (1/8")
Speaker Output	Mono mini jack (1/8")
Printer Output	Parallel ASCII 8 bit Centr.

★ HUGE FREE CATALOG ★

Universal offers a huge communications catalog covering shortwave, amateur and scanner equipment. There are also antennas, books, parts and accessories. This informative **100 page** reference covers everything for the radio enthusiast. With prices, photos and full descriptions.

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